WUC2014

April 8

Whitman College

undergraduate conference

April 8, 2014

Each year the Whitman Undergraduate Conference celebrates the scholarship and creativity of Whitman students over the course of a day devoted entirely to their accomplishments.

The 16th Annual Whitman Undergraduate Conference brings together students from every academic area of the college to share their research and creative projects with the campus community.

The conference is noteworthy for its variety of presentations, which take the form of talks, poster presentations, musical performances and special exhibitions.

The projects in this program attest to the original work that Whitman students have produced in their courses, senior theses, summer internships and study abroad.

schedule

April 8, 2014

Breakfast: 8:15 a.m.
The only breakfast served on campus will be a continental breakfast in Olin Hall foyer, the Hall of Science Atrium and Reid Campus Center.

Session I: 9-10:15 a.m.

Morning Intermission: 10:15-10:45 a.m.
In Olin Hall foyer, the Hall of Science atrium and Reid Campus Center

Session II: 10:45 a.m.-noon

All-Campus Lunch: Noon-1 p.m.
Reid Campus Center

Poster Session: 1-2 p.m.
Cordiner Hall Foyer

Session III: 2-3:15 p.m.

Afternoon intermission: 3:15-3:45 p.m.
Reid Campus Center

Session IV: 3:45-5 p.m.

musical performances

Morning Intermission
10:15-10:45 a.m.
Hall of Science atrium

String Quintet
Schubert: String Quintet in C Major (Adagio)
Ryan Jacobsen, violin; Lila Stange, violin; Jacqueline Rees-Mikula, viola; Eric Lombardo, cello; Tess LeNoir, cello

String Quintet
Dvorak: String Quintet in G Major, op. 77 (Allegro con fuoco) Ryan Jacobsen, violin; Lila Stange, violin; Jacqueline Rees-Mikula, viola; Eric Lombardo, cello; Nathan Radakovich, bass

Lunch
Noon-1 p.m.
Reid Campus Center

Jazz Ensemble
Gary Hemenway, director

Lucas Barry
Max Bates
Clayton Collins
Silene DeCiucies
Caitlin Foster
Tommy Gibson
Alexander Alex Ihle
Sebastian Jay
Brett Leroux
Jason Morrison
Nick Pellatz
Nathan Radakovich
Peter Ramaley
Max Reikosky
Pablo Rivarola
Joey Schaffer
Anya Tudisco
Skye Vander Laan

Afternoon Intermission
3:15-3:45 p.m.
Reid Campus Center

Jazz Combo
Musicians selected from Jazz Ensemble.

Session 1	Olin 130 **Film and Media Studies I**	Olin 157 **Catholicism in the Walla Walla Valley**	Science 159 **Chemical Interactions**	Science 100 Brattain Auditorium **Navigation and the Heavens**
9 a.m.	Lindsey Holdren	Annique Rice	Tao Large	Isaac Reister
9:15 a.m.	Margaret Logue	Anne Gaskins	Tristan Endreo	Nicholas Pellatz
9:30 a.m.	Maria Ptucha	Meghan Browne	Satchel Grant	Marin Meades
9:45 a.m.	Gillian Friedman*	Lauren Elgee*	Cameron Shishido*	Emma Dahl*
10 a.m.				
Coaches	Caitlin Rooney	Chris Cahoon	Emily Aumann	Jake Lindsay

Session 2	**State of the State I**	**Japan: History, Economy, Culture**	**Birdsong, Snail Trails and Habitat**	**Disease and Cure**
10:45 a.m.	Claire Johnson, Isabel Zarate, Leslie Rodriguez, Claire Collins, Andrea Berg, Maricela Sanchez-Garcia, Joshua Rubenstein, Kathleen McMurchie, Keiler Beers*	Jennifer Dardis, Jadelyn Martinez	Laurel Low	Alexander Honeyman
11 a.m.		Kirsten Valaas	Phoebe Horvath	Carol Pengshung
11:15 a.m.		Stephen Uramoto	Sabrina Rodriguez	Katherine Runkel
11:30 a.m.		MaryAnne Bowen	Ysabel Diaz	Nathan Radakovich
11:45 a.m.		Megan Murayama*	Marika Lou*	McKenzie Momany*
Coaches	Caitlin Rooney	Duy Tran	Ian Becker	Jake Lindsay

Noon-1 p.m. ☞ All-campus lunch in Reid Campus Center

1-2 p.m. ☞ Poster Session in Cordiner Hall

Session 3	**State of the State II**	**Gender and Identity**	**Terrestrial Terrain**	**Climate Change and Conservation**
2 p.m.	Loretta Velaochaga Klugger, Julia Bladin, Michael Augustine, Iska Nardie-Warner, Gladys Gitau, James Morris-Lent, Jacqueline Bonilla, Shivani Penberthy*	Lauren Hauck	Kira Murray	Alice Willson
2:15 p.m.		Alexandra Arneson	Claire Martini	Molly Simonson
2:30 p.m.		Marin Axtell	Katherine Elkind	Nicholas Davies
2:45 p.m.		Nina Pascucci*	Chase Martin*	Meredith Kretzler
3 p.m.				Erik Anderson*
Coaches	Caitlin Rooney	Chris Cahoon	Emily Aumann	Margaret Eismeier

Session 4	**War and the Executive Office**	**Rhetoric and Public Culture**	**Environmental Sociology and Justice**	**The Self: Skill Sets and Threats**
3:45 p.m.	Marlene Anderson, Lauren Hauck, Gordon Kochman, Emma Thompson, Jonathan Barsky, Benjamin Menzies*	Ziyi Vicky Su	Hannah Palkowitz	Mathurada Jullamon, Jadelyn Martinez
4 p.m.		Jesse Moneyhun	Sara Kleinkopf	Hadley Scherer, Maura Barstead, Chris Konolige
4:15 p.m.		Alyssa Donahue	Angeline Fugere	Catelyn Webber, MacKenzie Hughes
4:30 p.m.		Rachel Brock	Talia Rudee	Claudia Sanchez-Ayala, Yessica Palmer
4:45 p.m.		Meredith Ruff*	Ahren Stroming*	Michaela Lambert*
Coaches	Margaret Eismeier	Duy Tran	Ian Becker	Jake Lindsay

panel schedule

**Denotes moderator*

Science 151	Maxey 104	Kimball Theatre	Reid G02
Chemistry and Conductivity	**Health Care**	**Rhetoric and Socioeconomic Class**	**Politics and Power Struggles**
Taylor Nelson	Mykhanh Pham	Jonathan Barsky	Maxwell Reikosky
David Wilson, Julia Wu	Matthew Akins	Fernando Medina Corey	Colin Strong
Ivana Vukovic	Tia Herdman	Elana Simon	Forrest Watkins
Halley McCormick*	Caitlin Morley	Emma Nye	Keiler Beers*
	Tatiana Kaehler*	Paige Joki*	
Mitchell Smith	Noah Stern	Nicky Khor	Jessica Van Horne
Secrets of the Deep	**Religious Perspectives and Culture**	**Documentary Environmentalism**	**Film and Media Studies II**
Daniel Zajic	Molly Johanson	Faith Bernstein, Keenan Hilton, Chase Martin, Molly Hayes*	Thomas Barber
Kathryn Zajicek	Alissa Becerril		Nicholas Roberts
Nilce Alvarez Carreno	Benjamin Menzies		John Coppinger
Lucas Ramadan	Janaki Phillips *		Nathan Fisher
Meghan White*			Noelle Butler*
Michelle Flores	Simon Giloi	Kyle Hendrix	Nicky Khor
Physics Meets Philosophy	**Race and Visual Culture**	**Arts and Culture**	**Studies Abroad**
David Ball, Geoffrey Cushman	Emma Snyder	Katherine Lee	Nayomi Kanz, Kalen Bergado
Nicholas Shariat	Alyssa Goard	Margaret Eismeier	Theodore Ciszewski
Maxwell Reikosky	Xialing Ann Chen	Erik Feldman	Annie Watters
Logan Emlet*	Nandini Rathi*		Nathan Sany*
Mitchell Smith	Noah Stern	Nicky Khor	Jessica Van Horne
Divestment in Academe	**Discrimination: Study and Practice**	**Great Performances**	**Ideology, Rhetoric and Resistance**
Collin Smith, Audrey Vaughn, Claire Martini, Sierra Dickey*	Rosemary Hanson	Clayton Collins	James Lavery
	Kristen Whittington, Evan Kleiner	Aaron Stern	Allison Bolgiano
	David Fleming, Rachel Cline, Isabel Zarate	William Hunt	Keenan Hilton
	Sara Mecca, Katherine Benjamin	William Ekstrom*	Drew Powell*
	Alan Pugh, Beverly Li*		
Michelle Flores	Simon Giloi	Kyle Hendrix	Jessica Van Horne

posters 1-2 p.m. (lead presenters)

Gregory Dwulet | Expanding the Chemistry of 1-carba-closo-dodecaborate(1-): Microwave-assisted Syntheses of New closo-CB11 Derivatives

The derivatives of the 1-carba-closo-dodecaborate (1-) carborane anion (closo-CB11) have potential uses in medicine as a contrast agent or a boron-10 source for boron neutron capture therapy, in industry as a non-interfering counter-anion for cationic catalysis, and in optics and boren-substituted electronics. However, few simple and efficient synthetic techniques have been explored for the derivatives of the parent closo-CB11 compound. The mono and dicyanated derivatives, 12-CN-CHB11H10 and 7,12-(CN)2-CHB11H9, can be prepared in a simple two-step procedure in yields of over 80 percent, and have been characterized by nuclear magnetic resonance (NMR) spectroscopy, infrared radiation (IR) spectroscopy, mass spectrometry (MS), and X-ray crystallography. These derivatives are synthetically versatile, since nitrile groups can be readily converted into numerous derivatives by conventional organic reactions. Further derivatization of the cyanated compounds was explored via a number of routes, including reduction, Grignard conditions, and hydrolysis. The cyanation procedure and derivatization reactions will be discussed. Faculty Sponsor: Marcus Juhasz

Sterling Spilinek | Effects of Flower Cutting on the Foraging Activity of *Chelostoma rapunculi*

Worldwide, bee populations are at risk as human activity impacts nesting sites and food sources. *Chelostoma rapunculi* is a European bee that visits only flowers of the bellflower genus (Campanula). On Öland, Sweden, the bee's host plants grow along roadside ditches, which get mowed during peak bloom. To determine if this mowing affects the foraging activity of *C. rapunculi* during its 4-week flight season, two populations of bee nests were established and monitored for 18 days in July 2013; the control population was near abundant flowers that were not cut, the experimental population was provided flowers that were removed after eight days. Following the removal of flowers, experimental bees showed a decrease in number of nests and an increase in foraging trip duration. The findings suggest that mowing flowers has a negative impact on bee foraging, and hence reproduction. Faculty Sponsor: Heidi Dobson

Katherine Parker | Nature Drawing

Nature drawing is a scientific mode of illustration that provides a means for the artist to explore his or her natural surroundings. This collection of artwork includes quick field sketches and finalized drawings and watercolors that demonstrate various processes and forms of nature drawing. These pieces were completed during a semester-long independent study in which the participants spent time in the field exploring the Walla Walla and greater Blue Mountain region. Although the focus of the study was on learning basic techniques necessary for illustrating elements of the natural world, the result for all artists was a greater understanding of the natural history of the region. Faculty Sponsor: Delbert Hutchison

Joseph Mayo | Video Games and Gender Norms

Video games are an integral part of the lives of teenagers. The wide variety of video-game genres certifies their broad appeal and reinforces their influence with a large audience. Video games possess the potential to transform the social interactions of "gamers" – slang, in this case, for video-game players – as well as their perspective on society. My presentation examines how video games can alter or reinforce teenagers' views of patriarchy. Research in the form of a group survey will attempt to determine whether or not gamers internalize these messages. Through free-response questions to survey participants, I will evaluate whether or not these depictions of patriarchy not only influence teenagers' views towards masculinity but also reveal how video games enforce gender norms, causing men and women to be alienated from their sexuality. Faculty Sponsor: Keith Farrington

Lyla Wadia, Brett Lambert | The Effect of Change Modality on Change Blindness

We conducted a comparative experiment to study change blindness in humans and pigeons. The experiment was based on the flicker task, in which two similar images are presented alternately, and an individual must identify the element that is different between the two. Three independent variables were manipulated, with the expectation that they each would influence change detection in both species. The variables were inter-stimulus interval (present or absent); type of change (color or shape); and number of repetitions (one, two or four). We hypothesized that change detection would be less accurate when an inter-stimulus interval is present, when a change occurs within a dimension (e.g., a color stimulus changes to a different color) rather than between dimensions (e.g., a color stimulus changes to a shape), and when the change is presented for fewer repetitions. Faculty Sponsor: Walter Herbranson

Jack Morgan | Particle Distribution of Columbia River Sediments

Determining the spatial distribution of hydrophobic pollutants sorbed to lake and river sediments is an important step in developing fate and transport models. While there are several models that attempt to represent these processes, most are based on how well the model fits the experimental data, and not on explaining sorption and desorption mechanistic processes. This investigation utilizes scanning electron microscopy to determine the distribution of individual particles versus particle aggregates, and to measure the presence and size of organic particles that are known to dominate pollutant fate and transport in aquatic systems. Faculty Sponsor: Frank Dunnivant

Celine Valentin | The Effects of Inbreeding, Outbreeding and Hybridization on Tolerance to Drought and Nutrient Stress in *Mimulus*

We examined the ability of the *Mimulus* wildflower to adapt to environmental stresses that simulate conditions of the changing global climate. We created inbred, outbred and hybrid lines of *Mimulus luteus* and *Mimulus cupreus,* and then measured the responses of the six genetic crosses under varying environmental conditions. We exposed the plants to nutrient stress by using different levels of fertilizer and to drought stress by taking them off of their water source. Survival and reproductive fitness were calculated by measuring six traits related to survival and reproduction. Due to a heat wave this summer, the plants expressed red anthocyanin pigments in their leaves, and we were able to quantify the intensity of anthocyanin expression as an indication of plant stress. As global climate change alters local habitats, our results further scientific understanding of how this model organism can adapt to new environments. Faculty Sponsor: Arielle Cooley

Jay Barlow | Investigation of Microbial Enhanced Bitumen Recovery in the Athabasca Oil Sands

Alberta's Athabasca Oil Sands are the third largest oil reserve in the world. Oil sands contain bitumen – a viscous form of petroleum more difficult to extract than conventional crude. My project investigates the potential of employing microbes to assist the energy-intensive bitumen recovery processes in the Athabasca Oil Sands. Certain microbes produce biosurfactants, compounds that reduce interfacial tensions between liquids, and are industrially exploited in a technology termed microbial enhanced oil recovery (MEOR). Though MEOR is a viable practice in conventional

oil reservoirs, it has not been applied to oil sands. My independent study isolated a biosurfactant-producing bacterial strain and investigated its potential applications in the Athabasca Oil Sands. The strain and its biosurfactant, biofilm development, and bitumen extraction capabilities were characterized experimentally. Potential applications in oil sands extraction, upgrading and bioremediation were explored in a literature review. Faculty Sponsor: Sara Belchik, Kendra Golden

Livingston Martin | Immune Response to Phage Therapy in an Insect Model System

Phage therapy is a medical intervention used to combat bacterial diseases. It is based on the premise of using bacteriophages, or bacteria-specific viruses, to infect and kill bacteria. In human medicine, this therapy has been used successfully for decades, but it is primarily restricted to former Soviet bloc countries. We envisioned potential uses in the industries of forestry and agriculture, so we looked at phage therapy in the context of an insect (*Manduca sexta*) model system. We found that phage therapy did not work in our model, and we used this unexpected phenomenon to investigate the insect immune system. We found that instead of "curing" bacterial infections, bacteriophages actually worsened the health of bacteria-infected insects. We provide evidence in support of our "debris" hypothesis in that, by breaking apart bacteria, bacteriophages create many toxic bacterial fragments with which the unsophisticated insect immune system is ill-equipped to deal. Faculty Sponsor: Kendra Golden

Julianna Wetmore | Xenon-129 NMR of Aqueous Mixed-Micelle Solutions

Surfactants, the molecules that make up soap solutions, aggregate in water to form structures called micelles. Xenon-129 nuclear magnetic resonance (NMR) spectrometry was used to study these aqueous solutions to gain insight into the molecular properties of different surfactant systems. The drop weight method was used to make surface tension measurements, which allows the determination of the concentration at which micelles begin to form. By using these two tests, we can develop a better understanding of the different conditions under which micelles form and their structures. In this work we focused on mixed micelles, a micelle composed of two different types of surfactants. A cationic solution, hexadecyltrimethylammonium chloride was mixed with various concentrations of an anionic solution, decyl sodium sulfate. Faculty Sponsor: Allison Calhoun

Lydia Loopesko | Nivation Hollows in the Palouse

Nivation is any geologic process associated with snow. Snow banks may prevent the growth of vegetation if snow remains for an extended period of time. The suppression of vegetation leads to more erosion, and melt water may accelerate the process of mass wasting. These processes lead to a depression which, through positive feedback, results in a larger snow bank and a larger nivation hollow. Little research exists concerning the presence of nivation hollows in the Palouse. Daily camera images of snow accumulation in these hollows, along with satellite images and field measurements, provide an idea of the dimensions of the hollows, their locations, aspects and elevations. We will attempt to determine whether nivation processes truly cause the hollows that punctuate the Palouse. Faculty Sponsor: Robert Carson

Kerry Streiff | Isotopic Exploration of Bacterially Mediated Dolomite Precipitation in Deep Springs Lake, Calif.

The rules of thermodynamics govern the formation of dolomite, which causes this magnesium-rich carbonate mineral to form readily on Earth's surface. However, modern dolomite precipitation is extremely limited and occurs only in a few locales. The substantial quantity of dolomite present in the geographic setting for this study, Deep Springs Lake, Calif., indicates a surmounting of the chemical formation barrier, possibly facilitated by bacteria. My study analyzed present stable carbon and oxygen isotope ratios to monitor whether dolomite forms in conjunction with biological activity. Understanding modern microbiological contributions to carbonate precipitation is advantageous for identifying signatures of early life on Earth and may aid in detection of biological activity on other planets. Faculty Sponsor: Kirsten Nicolaysen

Alexandre Germanos | TCF Isoform Ratios in Leukemic Cell Lines

LEF and TCF are two redundant genes that work in the development of immune T-cells. TCF regulates the expression of LEF. In TCF knockout mice, LEF is overexpressed, which leads to a sharply increased chance of leukemia. TCF has two isoforms, large and small, that appear in roughly equal frequency in normal cells. In two leukemic cell

lines, the large form was found in much smaller proportions. In this project, it is hypothesized that it is, in fact, this larger isoform specifically that regulates LEF expression. To determine the ratios of TCF isoform, gel electrophoresis was used on 8 leukemic cell lines (4 human, 4 mouse) as well as some mouse control samples. In addition, qPCR of all cell lines was also run to measure the expression of TCF and LEF. Faculty Sponsor: Daniel Vernon

Gabriela Kaus | Expanding the Scr c-di-GMP Responsive Regulatory Circuit Controlling Swarming and Sticking in *Vibrio Parahaemolyticus*

Vibrio parahaemolyticus is a marine bacterium and a common cause of food poisoning. It has the ability to recognize surfaces and differentiates from a swimmer to a swarmer cell. In liquid, the bacterium swims. On surfaces, it either swarms or sticks and forms biofilms. The bacterial second messenger c-di-GMP modulates the switch between the different cell types by reciprocally influencing expression of swarming genes (laf) and capsule genes (cps). This work explored the function of VPA0358. The gene encoding VPA0358 resides in a three-gene operon. We hypothesized that this operon participates in the c-di-GMP dependent circuit controlling swarming and sticking. To test this idea, VPA0358 and VPA0360-58 knockout mutants were used to examine the effects on swarming gene expression and biofilm formation. Our results showed an increase in swarming gene expression and a decrease in biofilm formation. These results identify new regulatory genes in the circuit influencing sticking and swarming. Faculty Sponsor: Sara Belchik

Louise Fix | Fish Oil - Friend or Foe: The Effects of Omega-3 Fatty Acids on Human Colorectal Cancer

Fish oil, rich in long-chain omega-3 fatty acids, is known to promote anti-inflammatory effects by acting through GPR120 receptor pathways. However, their effects on different cancer types are largely unknown and controversial. Preliminary research on prostate cancer suggests that GPR120, is responsible for the ability of omega-3s to inhibit prostate cancer growth. To investigate the effects of the GPR120 receptor and omega-3 fatty acids on colon cancer growth, I conducted tests to determine if an omega-3 fatty acid (EPA) inhibits a growth factor-induced pathway in colon cancer cells. Even though my short-term results were inconclusive, further research will hopefully result in the ability to specifically target growth pathways for therapeutic purposes. Faculty Sponsor: Daniel Vernon

Janae Edelson | Evaluating the Expression of Anthocyanin-producing Enzymes in Heat-stressed *Mimulus*

One way plants respond to stress is by expressing anthocyanins in their leaves. In *Mimulus* plants, there are six known enzymes in the anthocyanin-production pathway. Following a heat wave, a mixture of *M. cupreus* and *M. luteus* plants with high and low-anthocyanin pigments were harvested in order to look for patterns of gene expression associated with the overexpression of anthocyanins. The plants were analyzed using semi-quantitative PCR. I wanted to see whether gene expression differed between *M. cupreus* and *M. luteus* and whether enzyme expression varied between high and low-anthocyanin pigmented plants within the same species. Results did not show a significant difference in gene expression between high and low anthocyanin-leafed plants within and between species type. It is possible anthocyanin genes were turned off before analysis began, therefore further experiments pertaining to the time it takes for anthocyanin gene expression to be lost could help explain the results. Faculty Sponsor: Arielle Cooley

Janni Conrad | Surface Catalysis of Ligand Exchange Reactions between Strong Chelating Agents

Agricultural, pulp and paper mill and medical industries use molecules called chelating agents to bind metal ions and control metal ion concentrations. These chelating agents often make their way into the environment where they can influence the distribution of metal species. One process that is affected is the exchange of the metal ion between chelating agents by a ligand exchange reaction. Our research examines how a surface, such as titanium dioxide (TiO2), may catalyze the exchange of nickel between CDTA and EDTA, two common chelating agents. By examining the kinetics of these exchange reactions using capillary electrophoresis (CE) we hope to understand the mechanism behind surface catalysis. As a first step to understanding the mechanism, we characterize the TiO2 surface through various methods including measuring nickel adsorption, the number of reactive surface sites and adsorption of CDTA and EDTA at varying pH using CE and atomic absorption spectroscopy. Faculty Sponsor: Nathan Boland

Daniel Ellis | Biomimetic Mo-Cu Model Complexes of Carbon Monoxide Dehydrogenase: Computational Design and Analysis

Molybdenum-containing carbon monoxide dehydrogenase (Mo-CODH) is an enzyme found in soil bacteria that catalyzes the oxidation of carbon monoxide (CO) to carbon dioxide in the presence of water. Mo-CODH contains two metal ions, molybdenum and copper, at its active site that are essential for its function. The unique chemical properties of this enzyme inspired us to design smaller synthetic catalysts for the oxidation of CO, which would have many environmental and industrial applications. To work towards developing synthetic models of the enzyme, computational modeling was utilized to understand the properties of different designs in regards to metal oxidation states, steric constraints and other electronic properties. Several active site models of Mo-CODH were generated from our computational studies. These models provide insights into the requirement of certain features around the active site of Mo-CODH. The development of synthetic procedures is currently being investigated. Faculty Sponsor: Dalia Rokhsana

Leah Mohtes-Chan | Comparing Myb4 and Myb5 Gene Expression Levels in Chilean *Mimulus luteus*

Anthocyanin pigment differs among populations of *Mimulus luteus,* Chilean monkeyflower plants. These pigments range in function from attracting pollinators to protecting plants against stressors. As a result, expression patterns of anthocyanins are susceptible to a multitude of environmental factors. The Myb genes in *Mimulus luteus* plants encode transcription factor proteins that help regulate anthocyanin production pathway genes. Consequently the up or down regulation of the Myb genes determine anthocynanin production. I wanted to test the expression levels of two Myb genes, Myb4 and Myb5, in two populations of *Mimulus luteus* plants to investigate each candidate gene's correlation to bud and leaf anthocyanin production. Semi-quantitative RT-PCR analysis showed a lack of Myb4 expression in the buds and leaves of both populations. Consequently Myb4 does not appear to contribute to anthocyanin production in these tissues. Myb5 did show some expression levels, suggesting it may contribute to anthocyanin production. Faculty Sponsor: Arielle Cooley

Thanh Huynh | Tracing Cancer's Deep Evolutionary Roots

We commonly view cancer as a disease, mutation or something that went out of control in the body. However, a new approach taken on cancer views the proliferation as a "mode of survival" rather than something that went wrong. Primitive unicellular species are immortal since they just replicate themselves to survive. As humans evolved into a complex multicellular species, we also developed tumor suppressor genes that suppress the cell proliferation we see in cancer. It is proposed that when activated by a stressor, the cells return back to their unicellular mode of survival and develop the immortality that their ancestors have. Faculty Sponsor: Thomas Knight

Walker Larson | Quantum State Tomography

Using simple photon states and a complex optical geometry, our work has created a method by which an arbitrary single photon state can be reconstructed in its entirety. Quantum states are inherently difficult to characterize, given that they exist in a superposition of states that they could be in, and the act of measurement collapses the state into one of these states. Quantum states have complementary aspects, and any individual measurement reveals information about only one of these aspects. To get all of the information we need, we must physically manipulate the state in a way that allows us to access all of these complementary aspects. We have built a novel interferometer that employs interference of single photons to do just this. Faculty Sponsor: Mark Beck

Morgan Dienst | A Study of Molybdenum Containing Carbon Monoxide Dehydrogenase Using QM/MM Methods

Carbon monoxide dehydrogenase (CODH) is an enzyme found in the soil bacterium Oligotropha carbidoxovorans that removes significant amounts of toxic carbon monoxide (CO) from the environment. The conversion of toxic CO to less toxic carbon dioxide occurs at an active site, molybdenum-copper (Mo-Cu), in the enzyme. In previous work, we systematically built active site models including only important residues around the dimetallic center and studied these models using Quantum Mechanics (QM) methods. Currently, we are exploring models with a larger protein environment using Quantum Mechanics/Molecular Mechanics (QM/MM) techniques. This will allow us to investigate the structure-function relationship of this enzyme and contribute to the development of synthetic models based on the active site. These synthetic models show promise in their potential applications towards cleaner, more environmentally friendly energy technologies. Faculty Sponsor: Dalia Rokhsana

Craig Barstow | Determining Central Washington Paleoenvironment using *Blancan Carnivora*

The carnivore fossils found in the Ringold Formation suggest that the environment of the Pasco Basin in south-central Washington during the Pliocene epoch (5.3-2.6 million years ago) differed greatly from today. The modern basin is an arid region, populated by predators well adapted to its open landscape. However, the diverse assemblage of carnivore fossils found in the Ringold Formation suggests a far more complicated paleoenvironment. While analogues of modern scrubland predators such as the coyote, the American badger and a relative of the hyena are well represented, fossils of the ancestral analogues of predators better adapted to forest environments such as the bear and the cougar are also present. When considered together, the assemblage of carnivore fossils present in the Ringold Formation suggests a paleoenvironment consisting of savanna and riparian forests once stood where now there is only scrubland. Faculty Sponsor: Patrick Spencer

David Burtt | Reconstructing Holocene Fluvial Discharge in the Marine Environment Near Eureka, Calif.

To accurately predict future climate change impacts caused by the recent rise in atmospheric carbon dioxide levels, we must understand the climate of the past. I worked with a number of scientists at the U.S. Geological Survey, and we set out to determine whether iron and titanium concentrations from marine sediment core TN062-O550, taken from the continental shelf off the coast of Eureka, Calif., could be used as proxies for sediment being transported out of the Eel River watershed. This watershed extends across the upper part of northern California and an increase in sedimentation rates likely correlates with an increase in discharge which may indicate changes in the local climate. Measured iron and titanium concentrations indicating reduced sedimentation rates in the last 1000 years may suggest a similar pattern of reduction in the sedimentation rates in the future. Faculty Sponsors: Robert Carson, Kirsten Nicolaysen

Cooper Schumacher | The Survey Logistic Regression Estimator with the Lasso

In survey statistics, often large amounts of auxiliary information are available and can augment the survey data in estimating quantities of interest. However, not all of this auxiliary data may be relevant, and so it is necessary to determine what data are important to produce an efficient estimator. The lasso regression estimator is designed to handle the types of problems encountered in inference of data from the U.S. Forest Service's Forest Inventory and Analysis Program and similar natural resource surveys. A logistic regression estimator with the lasso may also be used when estimating a proportion. In order to study the behavior of the lasso under various constraints, I ran simulations which assess the efficiency of the lasso estimate compared to other survey estimators in predicting the population totals. I then applied the estimator to Colorado Forestry data. Faculty Sponsor: Kelly McConville

Annelise Osterberg | Invisibility and Environmental Injustice in Jackson, Wyo.

Jackson, Wyo., a town at the base of the Teton Mountains whose stunning environmental amenities draw droves of tourists each year, is the site of conflict between environmentalists and affordable housing advocates. Despite the fact that the average home in Jackson costs around $1 million, environmentalists have been among the most vociferous critics to proposed low-income housing developments. While environmentalists condone the building of multimillion-dollar single-family homes, they oppose simple low-income housing developments. My presentation focuses on how the conflict in Jackson represents the broader conflict between traditional environmentalists and environmental justice activists. I look at the ways environmental activism in Jackson helps to create environmental injustice within the resort town. Faculty Sponsor: Alissa Cordner

Clint Vorauer | Synthesis and Labeling of CB9 Borane Clusters

Borane clusters have potential medicinal applications such as boron neutron capture therapy (BNCT) for cancer treatment. Additionally, these clusters can be radiolabeled with iodine-131 or astatine and used as imaging or therapeutic agents. Preparing radiolabeled compounds is a challenge due to the low concentration of radioisotopes. The CB9 cluster is of interest for radiolabeling because of its ability to react rapidly. Our aim was to synthesize several derivatives of the CB9 cluster and test their reactivity with iodine, iodine-131 and astatine. Four CB9 derivatives were synthesized and each was reacted with iodine. The symmetric isomers were most reactive with iodine. Based on the results of the iodine labeling, future experiments might include similar labeling with iodine-131 and astatine. This work is an important step towards the integration of CB9-based agents in medicinal treatments. Faculty Sponsor: Marcus Juhasz

Kristi Von Handorf | Working Memory for Verbal and Musical Material Under Conditions of Retroactive Irrelevant Sound

Baddeley's working memory model concerns storage and processing of information in the short term but does not account for the storage and processing of music. Previous studies indicate that musical memory should not be considered part of the phonological loop, which stores language information but requires a separate loop altogether. This assertion is supported by testing memory of tone and letter sequences while irrelevant sound is played. Irrelevant sound in the form of speech only disrupts memory for verbal information, whereas irrelevant sound in the form of tones only disrupts memory for tones. This modality-specific interference effect suggests that processing of musical and verbal material occurs in separate memory stores. My study varies the length and placement of irrelevant sound to better understand its effects. The results may shed light on how working memory functions and how musicians learn and practice music under distracting conditions. Faculty Sponsor: Matthew Prull

Aaron Cohen | Trace Element Compositions in Olivine Crystals of the Powder River Volcanic Field, La Grande, Ore.

The Columbia River Basalt Group (CRBG) is a large igneous province whose origins are disputed. Certain lavas of the CRBG erupted contemporaneously with the Powder River Volcanic Field (PRVF). These PRVF lavas have olivine crystals whose compositions differ with time of eruption and lava type. PRVF olivine basalt lavas are older and chemically distinct from the PRVF basanite lavas. Electron microscopy reveals differences in chemical composition. These data provides insight into the origins of the PRVF and CRBG, which have sparse amounts of olivine. Trace element data gives information about the magma sources and temperature and constrain the regional volcano-tectonic setting existing during the CRBG eruption. Faculty Sponsor: Kirsten Nicolaysen

Logan Emlet | Feedback Loops: Cash Crops and Human/Wildlife Conflict in Chumey Valley, Bhutan

Every night during growing season, each family with a farm in mid-latitude Bhutan must relegate one family member to a small guard hut in the family field to prevent crop damage from wild animals. For a nation in which over 80 percent of households depends on agriculture, crop damage is no small problem. For some unlucky families, a single nighttime invasion of marauding wild pigs can destroy over half of a year's income. This problem has only become worse as the government has encouraged the growth of cash crops and the preservation of local forests. My poster presentation is the culmination of a week of directed research conducted in the Chumey Block of Bumthang Dzongkhag in central Bhutan. I interviewed half of the valley's population in an attempt to determine the extent of the damage, its connection to government policy changes and possible ways to resolve this human-wildlife conflict. Faculty Sponsor: Jonathan Walters

Hannah Wilson | Comparison of Pliocene and Modern Camel Species and Implications for Paleoclimate Change

During the Pliocene epoch (4.3 to 2.6 million years ago), the climate of southeastern Washington was very different than today. Riparian forests, open woodlands, and savanna supported a variety of large mammals as indicated by an extensive fossil record. My study focuses on two species of camel (Hemiauchenia and Megatylopus) which inhabited the area near Walla Walla during the Pliocene, both of which have modern analogues in geographically distant locations. The camel species provide an excellent opportunity to study the environmental changes that caused them to migrate so far from their original range and how their modern environment differs from the local paleoenvironment. This research will create a more complete picture of a previous episode of global climate change and lead to better understanding of some of the environmental shifts we will face in our lifetime due to current climatic trends. Faculty Sponsor: Patrick Spencer

Silene DeCiucies | Methods of Clay Mineral Analysis Using the Oxford Xcalibur Nova Diffractometer

Clays are a mineralogical group critical to understanding the surficial geologic processes of Earth. However, clays are difficult to identify because they are generally poorly crystallized, have a high concentration of defects, and have very similar chemical compositions. X-ray diffraction (XRD) is currently the best technique for identifying clay minerals, but not all types of XRD instruments have established methods for analyzing clays. Our study develops new methodology for using single crystal diffractometers for the purpose of analyzing clays, specifically the Oxford Xcalibur Nova which is available on the Whitman campus but is not designed for clay mineral analysis. Faculty Sponsor: Nicholas Bader

Morgan Walker | Individual Differences in Learning Motivation and Achievement Outcomes

Motivation to learn differs among students. Research on self-determination theory (SDT) conveys associations between goal framing (intrinsic vs. extrinsic) and students' well-being, academic success and learning persistence. Previous studies suggest that most students will perform best in an autonomy-supportive, intrinsically motivated setting. However, SDT studies have also shown that personality may be predictive of people's overall motivation orientation: i.e. preference for greater autonomy support or control. In my study, the classroom support context and goal-framing were manipulated. A correlational analysis determined how personality was connected with students' motivation and self-determined tendencies in addition to achievement outcomes. Achievement success was measured by quiz results, learning persistence, and perceived satisfaction of psychological needs. If the hypotheses receive support, future studies may focus on personality-based learning techniques. Personality-focused learning could increase students' motivation and therefore success in the classroom. Faculty Sponsor: Pavel Blagov

Trudy Soriano | Light Pollution from the Washington State Penitentiary

At night, the light coming from the grounds of the Washington State Penitentiary can be seen from many miles away. During the summer of 2013 I interned with the International Dark-Skies Association, an organization working to minimize light pollution, which is the excess of artificial outdoor lighting at night. Excessive outdoor lighting has negative effects on human health, astronomy, wildlife and safety. Light pollution is also a misuse of energy; reducing

the waste is cost-effective. The light coming from the penitentiary, which is then reflected off the clouds above, creates sky glow due to the excess of light going upward (versus being focused downward). My research focuses on how the penitentiary can change the lighting to save energy costs and reduce sky glow while maintaining adequate security. In the spring Prof. Bob Carson and I will present our ideas to the penitentiary. Faculty Sponsor: Robert Carson

Alexandra Roston | KCNE1 and KCNQ1: Maintaining Normal Cardiac Rhythm

As a voltage-gated potassium channel, IKs is instrumental in maintaining normal heart rhythms in many mammalian systems. Malfunction of this channel is associated with a number of serious and sometimes fatal heart conditions, including long QT syndrome, short QT syndrome and familial atrial fibrillation. My original research, conducted at the Fedida Laboratory (University of British Columbia), illustrates how IKs channel subunits work together to maintain normal heart rhythms. Poster sections include an introduction and purpose, as well as methods, conclusions and a discussion of research findings. These findings are comprised of electrophysiological data, such as graphs of voltage conductance and fluorimetry assays. My presentation will illustrate the importance of interactions between two major channel subunits, KCNE1 and KCNQ1. It will show that normal, coordinated function of these subunits is crucial for healthy heart rhythms. Faculty Sponsor: Leena Knight

Sophia Hannaford | Mandarin Tone Recognition Test to Improve Pitch Perception with Cochlear Implants

Cochlear implants are surgically implanted electrical devices in the inner ear that replace the natural hearing ability in those with severe deafness. More than 10,000 people who speak a tonal language have a cochlear implant. Mandarin Chinese is the most widely spoken tonal language, and many cochlear implant users struggle to comprehend its pitch changes. Using a Mandarin tone perception test program, I evaluated the ability of subjects to categorize spoken tones as rising, falling, flat or falling and then rising. All subjects had no familiarity with tonal languages. Two programs for processing the sound were tested, the clinically used program and a novel program. Both normal hearing and cochlear implant listeners were tested with each. The novel program was shown to significantly improve perception of tones in both types of subjects. This suggests that an improvement to current programs can be made to improve speech tonality perception. Faculty Sponsor: Thomas Knight

Ryan Calvert | Physician-Patient Nutrition Counseling and Cardiovascular Disease in Walla Walla

Cardiovascular disease (CVD) is a leading cause of death in the United States despite the wealth of preventive information. In Walla Walla County, CVD is trumped only by cancer as a cause of death. Counseling toward lifestyle change is successful in reducing the risk of CVD. Of the risk factors involved in CVD prevention, weight management and diet play major roles. Physicians, however, are not particularly well-known for dispensing nutrition information. My study questions the current practices of local physicians regarding CVD counseling, specifically about nutrition. A survey distributed to Walla Walla physicians inquired about time spent counseling patients about nutrition, referrals to dietitians and hours of nutrition education in medical school. Walla Walla County physicians reported comparable rates of these elements compared to physicians in nationwide studies. It is recommended that this survey be modified and used annually to enlighten physicians and to assess CVD morbidity in Walla Walla. Faculty Sponsor: Kendra Golden

Geoffrey Cushman | Searching for Variable Stars and Extrasolar Planets

Measuring stellar variability is an extremely useful tool for astronomers in order to detect phenomena such as transiting extrasolar planets and to study variable stars. For the past six months, the SLRCAM project has been gathering data in an attempt to calculate and detect stellar variability with low-cost hardware and open-source software. Pictures were taken every 10 minutes atop the Hall of Science roof in order to acquire 1.5 GB of data every day. Once we collected the images, we created a robust data pipeline to manage the data. This pipeline determines the world coordinate system for the images which serves to assign stellar coordinates to each star detected. Finally, open-source software uses this information to measure the brightness of stars in the images and output light curves of stars which are found to be variable. Faculty Sponsor: Nathaniel Paust

Margaret Robinson | Leaf Characteristics Assessed by Leafcutter Ants (*Atta Cephalotes*) in Foraging

The neotropical leafcutter ant *Atta cephalotes* harvests leaves to use as a substrate for its fungal food source. The ants are selective foragers, avoiding leaves that are detrimental to their fungal partner, although specific cues that dictate their foraging decisions remain unknown. I investigated the roles of leaf color, chemistry and wax in foraging using oat flakes coated in food coloring, leaf extract from one host plant, *Zygia palmana,* and candle wax. In two-way choice tests, single and combined oat treatments were presented along foraging trails. Oat selection was recorded over 15 10-minute trials. Ants showed no preference between red and green oats, suggesting that color is unimportant in leaf selection. Ants showed significant preference for oats with mature versus young-leaf extract, and for plain over wax-coated oats, suggesting that leaf chemistry and wax may provide chemical and tactile cues that determine which leaves are selected from the host tree. Faculty Sponsor: Heidi Dobson

Zack Strater | Anti-Cancer Drug Design Inspired by the Fungus *Apiospora Montagnei*

An often overlooked fact is that many medicinal drugs are inspired by or are designed to mimic molecules found in nature. One such biological compound that has engendered a slew of potential drugs is TMC-95A, which is a cyclical molecule that was originally discovered in the fungus *Apiospora montagnei.* It was found that TMC-95A was a potent inhibitor of the proteasome, a large enzyme that regulates several essential cellular processes by recycling damaged and misfolded proteins. The ability to inhibit the proteasome is highly desirable as it has been shown to be a promising treatment for certain types of cancer such as multiple myeloma. However, large scale production of TMC-95A has remained infeasible. Thus, the goal of this research is to design compounds that mimic the functionality of TMC-95A but are much easier to prepare in the lab. Faculty Sponsor: Marion Gotz

Sarah Debs | Modeling the Rhythmic Activity of the Respiratory Neuronal Network in the Pre-Bötzinger Complex

Respiratory rhythm in mammals is generated in the pre-Bötzinger Complex (pBC), located in the ventrolateral medulla of the brainstem. The pBC is composed of a heterogeneous population of neurons, some of which exhibit intrinsic bursting behavior. The firing activity of these bursting neurons consists of rapid spiking followed by quiescent periods and is thought to be caused mainly by the slow kinetics of a persistent sodium current. The neurons in the pBC are synaptically interconnected to form an intrinsically oscillatory network. The purpose of my study is to examine the effects of inhibitory and excitatory connectivity on the rhythmic activity and synchronization of the pBC pacemaker network. We used the cellular model proposed by Butera et al. and the program QuB to create a computer model of a network of pBC neurons. We ran simulations with different values for some of the most critical parameters, including synaptic strength and conductance. Faculty Sponsor: Thomas Knight

Forrest Watkins | Binding of Pentamidine Analogs to CTG/CAG-rich DNA: A Mechanism of Action for the Improvement of Myotonic Dystrophy Mis-splicing Events?

Myotonic Dystrophy 1 (DM1) is a genetic disease whose symptoms include muscle wasting, cataracts and nervous system abnormalities. Bisbenzamidines have been implicated in the treatment of its symptoms, by reducing the transcription of mRNAs containing toxic CUG repeats. To better understand how bisbenzamidines inhibit transcription of CTG repeats, we examined how bisbenzamidines bind to CTG repeat DNA in vitro, using bisbenzamidine derivatives that fluoresce upon binding to DNA. To explain an increased remediation of DM1-like phenotypes in vivo with increased length of the benzamidine central linker chain, we hypothesized that longer linker length may lead to tighter binding to CTG repeat DNA. Competition trials between fluorescent and non-fluorescent bisbenzamidine derivatives suggest that DNA-binding ability does increase with increasing linker chain length. This indicates that linker length could be important to the effectiveness of bisbenzamidines in alleviating DM1 symptoms associated with the production of CUG-rich mRNAs. Faculty Sponsor: Arielle Cooley

session 1
9-10:15 a.m.

Film and Media Studies I
Olin Hall 130
Gillian Friedman, moderator
Caitlin Rooney, coach

Lindsey Holdren | Action Heroines from the '70s to the Present 9 a.m.

From the 1970s to today, the portrayal of action heroines has generally evolved in a socially progressive manner. However, the progressive liberalism and superficial female empowerment mask underlying dominant Western ideologies such as patriarchy and white supremacy. Hollywood's portrayal of heroines inevitably features regressive elements. In my presentation, I examine regressive "declawing" methods, including fetishization, voyeurism and hyper-feminization, in texts such as "Xena: Warrior Princess," "Miss Congeniality," "Brave" and "The Hunger Games." The overwhelming presence of white and traditionally beautiful female heroes demonstrates a deficit of social progressivism in an otherwise progressive set of media texts. It is imperative that diversity, in its many forms, is represented on screen as a means of contributing to and supporting societal equality, and providing realistic and inspiring role models for young women. Faculty Sponsor: Anne Petersen

Margaret Logue | Pastiche Commentary in Postmodern Horror: The Re-Analysis of Gender Ideologies in "Scream" and "The Cabin in the Woods" 9:15 a.m.

In my presentation, I examine key elements of the slasher film genre, paying particular attention to the "final girl" and her role in representing the ideologies of classic horror. I approach the topic through the lens of the psychoanalytic theory of abjection and Mulvey's theory of the male gaze, which reveal an intriguing voyeurism and treatment of gender that is potent in most classic slasher films. Classic slashers present ideologies that are highly phallocentric and explore the conflicting desire for and fear of female sexuality. I use "The Cabin in the Woods" and "Scream" to investigate the role postmodern horror has played in identifying and commenting on ideologies in classic slashers to fit contemporary issues. I argue that subtle shifts in the formula disrupt the traditional narrative closure in classic slasher films and provide pointed commentary that reflects the shift in contemporary attitudes toward gender and female sexuality. Faculty Sponsor: Anne Petersen

Maria Ptucha | When Television Criticism Becomes Television 9:30 a.m.

In a time of increased access to outlets for television criticism, some producers address critics within the narrative boundaries of their shows. Looking at episodes from "Grey's Anatomy," "The Mindy Project," and "Saturday Night Live," I focus on these self-critical moments and discuss how they function to placate viewers and rebuff critics. When moments come along that make it clear to viewers, whether critics or fans, that their words have reached the writer's room, it is essential to decode these moments of self-criticism to understand how they can also function as moments of self-promotion. Faculty Sponsor: Anne Petersen

Gillian Friedman | Behind Enemy (Panty) Lines: The Ideology of Thong Underwear 9:45 a.m.

Who created the "requirement" that women must wear thong underwear with tight clothing? Who decided that panty lines are "dreaded" and must be avoided at all costs? My presentation analyzes the role of the thong in contemporary culture. It situates the thong in a historical context of women's undergarment trends since 1900, showing how corsets, girdles and other compulsory, constraining garments symbolized women's limited and prescribed role in society. Are tiny, lightweight thongs a liberating relief from the burdens of constricting, body-shaping undergarments? Or, by re-

inforcing the idea of seamless lines, do thongs actually represent a regression to restrictive notions of feminine beauty? I evaluate these questions through the lens of ideology, the ideas that define what body shape or garment is deemed attractive and that, by capturing popular adherence, allow the patriarchal institutions of power to remain dominant. Faculty Sponsor: Anne Petersen

Catholicism in the Walla Walla Valley

Olin Hall 157

Lauren Elgee, moderator

Chris Cahoon, coach

Annique Rice | Migration and Globalization: A 19th Century Network 9 a.m.

Until the 19th century the vast landscape of the American West was an inconceivable expanse of terrain. As the population of rural Quebec exploded, far outstripping available land resources, many impoverished families escaped to the rapidly industrializing United States. The Bergevin family moved west with the massive migration, eventually settling in Walla Walla. Once there, they maintained correspondence with their sister, Sister Marie Augustin. A catholic nun, she wrote them fervently during her travels. While thousands of miles separated families like the Bergevins, growing rail and postal systems delivered news of those who were absent. My presentation explores how the rapidly developing networks enabled Sister Marie Augustin's relationship with her family to survive and change amidst an expanding global imaginary. Through an analysis of the preserved letters in the context of rail and postal history in the United States, I examine this family's correspondence as evidence of early globalization. Faculty Sponsors: Sarah Hurlburt, Melissa Salrin

Anne Gaskins | Writing Reunion: A Theoretical Perspective on Correspondence in the 19th Century 9:15 a.m.

In 19th century America, the primary means of communicating cross-country was the letter. Sister Marie Augustin, traveling throughout the United States as a French-Canadian Sister of the Holy Names, was separated from her family members in Walla Walla and Québec for most of her life. The text of her correspondence with these relatives reveals her remarkable strategies for remaining close to her family, some of whom she would never see again. From conceptualizing letters and photos as real-life "visits" to searching for connection in the togetherness represented by group photographs, Sister Marie Augustin created her own virtual world in which her family could reunite. Through analyses of excerpts from her letters, my presentation examines her writing from a theoretical perspective, linking epistolary and trauma theory in an examination of 19th century rhetorical strategies for coping with separation. Faculty Sponsors: Sarah Hurlburt, Melissa Salrin

Meghan Browne | Catholicism in the Walla Walla Valley 9:30 a.m.

Sister Marie Augustin of the Sisters of the Holy Names of Jesus and Mary never made it to Walla Walla to visit the family to whom she frequently wrote. Similarly, her order was never established in the Walla Walla Valley. However, the contributions and dedication of these ambitious women to their faith made a lasting impression on Catholicism in the Walla Walla Valley. Sister Marie Augustin's correspondence with her family in the region was crucial to the survival of their native religion and language. In nearly every letter, she asked the family about their religious practices: "How often do you go to church? Are the children being taught in a Catholic school?" Through these guiding questions I trace the history of Catholicism in the Walla Walla Valley and the significant role that religious women played in sustaining and building strong Catholic communities. Faculty Sponsors: Sarah Hurlburt, Melissa Salrin

Lauren Elgee | An Education Pioneer: The Professional Achievements of Sister Marie Augustin 9:45 a.m.

Marie Augustin of the Sisters of the Holy Names of Jesus and Mary was a French Canadian nun who spent her professional life traversing the United States to establish and ameliorate Holy Names schools. Her active obedience record from 1851 to 1899 suggests that she was not only busy but also one of the most accomplished and in-demand

nuns of the congregation. She endured disease and substandard conditions to advocate for the education of marginalized people. She also established schools that catered to wealthy Catholic populations. Through an examination of the target populations of the schools impacted by Sister Marie Augustin as well as the chronicles of these schools, my presentation seeks to glean the congregation's motivations for the establishment of Catholic schools in the United States. Faculty Sponsors: Sarah Hurlburt, Melissa Salrin

Chemical Interactions

Science 159

Cameron Shishido, moderator

Emily Aumann, coach

Tao Large | Redox-Dependent Structural Changes at the Carbon Monoxide Dehydrogenase Active Site: Computational Investigations Using DFT 9 a.m.

Molybdenum-containing carbon monoxide dehydrogenase (Mo-CODH) is an iron-sulfur flavoprotein that catalyzes the oxidation of CO to CO2, yielding protons and electrons with potential applications in alternative fuels. CO conversion occurs at a Mo-Cu center, believed to be catalytically active in the Mo(VI)-Cu(I) state. This state has been structurally characterized by X-ray diffraction; however, the metal oxidation state and coordination environment of the active protein remain uncertain. We have employed a systematic model-building approach to incorporate residues essential in modulating the geometric and electronic features of the active site. These models are being validated using experimental spectroscopic and redox data, and are being used to investigate redox-dependent structural changes between the oxidation states in the proposed catalytic cycle. Faculty Sponsor: Dalia Rokhsana

Tristan Endreo | Xenon-129 NMR of Aqueous Micelle Solutions Containing Salts 9:15 a.m.

Surfactants are molecules with hydrophilic and hydrophobic components. Surfactants in aqueous solutions will self-aggregate at a certain concentration, forming supermolecular structures called micelles. This concentration is the critical micelle concentration (CMC). Furthermore, addition of simple salts decrease the CMC of these micelle systems, observed through surface tension measurements. This phenomena is explained by a salting-out effect. Hydrotropes can also cause salting-out. In this research, we investigated and compared the effects of different added salt and hydrotrope species to aqueous surfactant systems. We performed surface tension measurements as well as used Xenon-129 nuclear magnetic resonance spectrometry (NMR) to probe the interior of the micelles. Results indicate that added sodium butyl sulfonate hydrotrope to sodium dodecyl sulfate surfactant affected micelle composition as well as its CMC instead of only altering the CMC through the salting-out effect. This research will help determine drug solubility in micelles under varying external conditions. Faculty Sponsor: Allison Calhoun

Satchel Grant | Xenon-129 NMR and Surfactant Solutions 9:30 a.m.

Xe-129 NMR was used to probe the chemical environment of aqueous solutions of surfactants and surfactants with added hexane. Data from surface tension measurements were used in collaboration with the NMR to elucidate the environment within the micelle. The results were compared with prior measurements from this group on surfactant solutions containing added salts and hydrotropes. A salting-out effect has been observed in the surfactant-salt solutions and within some hydrotrope-surfactant solutions. It is expected that the addition of hexane will increase the hydrophobic nature of the solution. Future experimentation will focus on the effects of additional alkanes within surfactant micelles. Faculty Sponsor: Allison Calhoun

Cameron Shishido | Modified Lanthanide Doping of Sol-gels by Organosilicon Functionalization 9:45 a.m.

Due to their unique structural and optical properties, lanthanide-based hybrid organic-inorganic materials are studied both for fundamental research and applications in optical devices. The sol-gel process is a useful method for doping molecular lanthanide complexes into silicate glass to create hybrid materials with high thermal stability and strong luminescence. To overcome dopant leaching and clustering effects caused by the lack of strong bonding between the

dopant and host material, we have functionalized molecular lanthanide complexes with organosilicon groups to allow them to covalently bond with the silica network of the sol-gel glass. Using this synthetic method, we have fabricated sol-gels codoped with samarium and europium complexes with the intention to observe electronic interactions between lanthanide ions. Luminescence properties of these materials have been measured by fluorescence spectroscopy. Faculty Sponsor: Kurt Hoffman

Navigation and the Heavens

Science 100

Emma Dahl, moderator

Jake Lindsay, coach

Isaac Reister | Where Did the Compass Point in the 13th Century? 9 a.m.

The importance of the compass to the earliest days of navigation is undeniable, but how this instrument actually worked was a continual mystery even as it became the lynchpin of exploration. Today it might seem trivial how the compass functions, but the explanations were incredibly varied during the 13th century, some bizarre beyond belief and others remarkably close to the truth. The formation of an idea is a fascinating event regardless of its eventual success, and by examining it closely we can see the importance of the flawed theories that might be left out of history in the rush to see the solution. The works of John of St. Amand and Petrus Peregrinus in particular will help us delineate a few theories and allow us to appreciate the triumphs of thought, luckiness of guesswork and spectacular failures of the 13th century scientist. Faculty Sponsor: Kurt Hoffman

Nicholas Pellatz | The Orbital Angular Momentum of Light 9:15 a.m.

It's been established for some time that photons ("particles" of light) can carry spin angular momentum, but the fact that photons can also carry orbital angular momentum is a more recent discovery. A beam of light incident on a special forked diffraction grating feels a torque from the grating and is forced to travel in a spiral about the beam axis. As with many other quantum variables, only certain values of the orbital angular momentum are allowed. There are, however, infinitely many orbital angular momentum states available for photons (as opposed to only two spin angular momentum states). Our research has focused on techniques for generating, superposing and effectively sorting these orbital angular momentum states. Understanding how to manipulate the orbital angular momentum of photons could have implications for research in quantum computing as well as our understanding of the entanglement of quantum states. Faculty Sponsor: Mark Beck

Marin Meades | Computational Modeling of Protoplanetary Disk Systems 9:30 a.m.

The development of early disk systems around stars is integral to both a star's development and the formation of planets. As imaging technology rapidly improves and we begin to collect direct observations of protoplanetary disks, it is increasingly important to have a sound mathematical understanding of how these disks form and evolve, and especially how they can lead to planet formation. I will examine the models I have been remotely running on the ACISS (Applied Computational Instrument for Scientific Synthesis) supercomputer at the University of Oregon. These simulations begin by constructing a rotating equilibrium disk with azimuthal symmetry around a central star. Most previous research on this subject simply approximates the star as a point mass, but the simulations I discuss also model the resolved interior of the star. The code perturbs the initial equilibrium system and calculates how the structure changes over time. Faculty Sponsor: Kathryn Hadley

Emma Dahl | Observing Occultations to Determine the Shape of Asteroids 9:45 a.m.

One way to determine the size and shape of asteroids in our solar system is to observe a given star as an asteroid occults it – that is, moves in front of the star for a brief amount of time. Via a system of low-light cameras, portable telescopes and sensitive timing equipment, we can chart the light-dip of the star and derive the length of the asteroid at the point we measured it. In collaboration with the International Occultation Timing Association (IOTA), we can piece together our data with that of other astronomers and help determine the shape of the asteroid as it occulted a star. Faculty Sponsor: Andrea Dobson

Chemistry and Conductivity

Science 151

Hailey McCormick, moderator

Mitchell Smith, coach

Taylor Nelson | Influence of Lewis Base Identity on Rates of Ligand Exchange 9 a.m.

Chelate is derived from the Greek word for "claw," and chelating agents are molecules which bind single metal atoms at multiple sites, surrounding them like a claw to form a metal complex. This affinity for metals makes chelating agents very useful in agricultural, cleaning and pharmaceutical applications. Some chelating agents form stronger complexes than others. Because of this, when a weak metal complex is in solution with a strong chelating agent, the metal will be exchanged to form the more favorable, strong complex. Depending on the properties and structure of each chelating agent, the speed of this exchange reaction can vary greatly. These reactions have been examined for some chelating agents, but there is not sufficient information to predict the influence of varying chelating agent structure on the rate of reaction. By continuing the investigation of ligand exchange reactions, we hope to gain insight into the pathways these reactions follow. Faculty Sponsor: Nathan Boland

David Wilson, Julia Wu | Proteasome Inhibitors as Novel Cancer Treatment 9:15 a.m.

The proteasome is part of a larger class of proteins known as proteases, which are enzymes responsible for breaking down proteins in the cell. By degrading targeted proteins in the cell, the proteasome regulates the cell cycle and programmed cell death. Because of the proteasome's regulatory effects, compounds which limit proteasome activity, also known as proteasome inhibitors, have the potential for developing novel treatments of cancer. The chemotherapy drug bortezomib is a proteasome inhibitor currently FDA approved for treatment of multiple myeloma, a type of bone cancer. However, due to bortezomib's toxicity towards healthy cells, patients who are treated with bortezomib experience numerous side effects. A new class of proteasome inhibitors based on a naturally occurring compound found in the fungus A. montagnei shows promise in overcoming these side effects. We have designed and synthesized four novel compounds and are in the process of testing their effectiveness in proteasome inhibition. Faculty Sponsor: Marion Gotz

Ivana Vukovic | Cloning and Expression of Catechol 2,3 Dioxygenase 9:30 a.m.

There are many soil bacteria that can degrade naturally occurring aromatic compounds by oxidative ring cleavage. However, there are only a few bacteria that can degrade chlorinated aromatic compounds such as pesticides. PcpA is one such aromatic ring-cleaving dioxygenase which resembles well-characterized Fe(II)-dependent catechol extradiol dioxygenases (EDO). One of the sources of the unique specificity of PcpA could be the pKa of its substrate. This past summer I cloned 3 different constructs of XylE gene. XylE codes for a typical extradiol dioxygenase, catechol 2,3 dioxygenases. I plan to express enough protein to perform substrate binding titrations for XylE and provide comparison for substrate binding between PcpA and an EDO. Knowing how PcpA degrades chlorinated pollutants could help in the work that is being undertaken in reengineering new enzymes for the same purposes. Faculty Sponsor: Timothy Machonkin

Halley McCormick | The Inverse Conductivity Problem and N-to-1 Graphs 9:45 a.m.

Given an electrical network, we say that its structure is a graph and that its electrical behavior is defined by a conductivity function. The inverse conductivity problem is that of using electrical measurements taken on the edge of the graph to learn more about how the interior of the network behaves. Depending on the shape of the graph, the information we can glean from these boundary measurements varies. More specifically, this research focuses on how we can construct a graph so that an arbitrary number of conductivity functions can be associated with it, each of which yields the same electrical behavior on the edge of the graph. We call such a graph an N-to-1 graph. These results apply to the theoretical study of electrical networks which may, in the future, be useful in understanding actual electrical networks. Faculty Sponsor: Albert Schueller

Health Care

Maxey 104

Tatiana Kaehler, moderator

Noah Stern, coach

Mykhanh Pham | Assessing the Current Health of Walla Walla County 9 a.m.

"The mission of the Walla Walla County Health Department is to improve the quality of life for our community through disease prevention, health promotion and public health protection." In order to further this mission, it is important to identify the health issues currently affecting the people in Walla Walla County. The Community Health Assessment provides an overview of the many factors that impact health outcomes, including socioeconomic status, behavior and the environment. Working with the Health Department, I have carried out this assessment by analyzing current health indicator data and meeting with members of the community to note county-wide health trends and to define sub-populations with health inequalities. This will eventually lead to creation of the Community Health Improvement Plan, which will guide the Health Department's future initiatives. Faculty Sponsor: James Russo

Matthew Akins | Medicine as a Tool of War in the Algerian Revolution 9:15 a.m.

The Algerian revolution against French colonial rule (1954-1962) saw the systemization of medicine as a tool of war. The Algerian National Liberation Front (FLN) began to use medicine as a form of propaganda by providing free medical care to areas under its control. The practice of medicine, which had become of a tool of French colonial power, was reappropriated by the FLN, allowing évolué doctors (elite Algerians trained in French medical schools) to be integrated into the revolutionary movement. I argue that following the instructions of FLN, doctors became a revolutionary act in and of themselves. The pairing of medicine with the revolution allowed access to universal healthcare to become a part of Algeria's nascent nationalism. Strict patient adherence and preventive healthcare led to improved outcomes. To this day Algeria has lower infant mortality rates and a longer average lifespan than its neighbors. Faculty Sponsor: Jacqueline Woodfork

Tia Herdman | Prick, Prod and Provoke: Acupunks and Community Acupuncture Reworking Chinese Medicine 9:30 a.m.

Peoples Organization of Community Acupuncture (POCA) is redefining the way that acupuncture is offered in the West. Acupuncturists that work for POCA are self-defined "acupunks" who treat patients in community settings that allow for a high-volume, low-cost business model. While POCA practitioners see themselves as providing a radically different vision and philosophy of acupuncture, they do so while holding onto conceptions of core features of Traditional Chinese Medicine (TCM). My presentation addresses how ancient practices associated with TCM have been shaped over time, space and cultural translation. In addition, I consider how POCA acupunks situate themselves in a larger context of "holistic" medicine while using acupuncture to address socioeconomic issues and participate in healthcare reform. Faculty Sponsor: Suzanne Morrissey

Caitlin Morley | Cancer in Context: Alternative Perceptions of Cervical Cancer Among the Mapuche and a Reflection on Intercultural Healthcare 9:45 a.m.

Cervical cancer is a growing problem in Latin America. The Mapuche people of Chile are one sector of the population with elevated incidence. An understanding of how different cultures perceive illness can bridge the gap between social and biological conceptualizations of disease, disperse risk theories that blame the sick and create intercultural healthcare that is both sensitive and pertinent. At the time of my investigation, no such studies among the Mapuche had been published. In recognition of this discrepancy, my presentation addresses the question: What is the Mapuche cultural perception of cervical cancer, and how does the local hospital function in its role of providing intercultural healthcare with respect to this illness? Building upon qualitative research gathered at the hospital and in the community, I discuss the Mapuche concept of cervical cancer within the social and political context of their conflict with the Chilean state. Faculty Sponsor: Jason Pribilsky

Tatiana Kaehler | Integrated Health Care Systems: A Holistic Approach to Medicine in Madagascar 10 a.m.

The World Health Organization reports that low-income countries have 10 times fewer physicians than high-income countries. This gap in access to health care contributes to numerous global health disparities, including differences in mortality rates, disease transmission and life expectancy. In Madagascar, health care access has improved due to the implementation of integrated health care systems, which incorporate traditional medical practices with allopathic health care strategies. My research explores the ways in which the systems in Madagascar provide health care in an affordable and accessible manner while promoting cultural sustainability and the conservation of biodiversity. Understanding and implementing integrated health care systems can lead to further discoveries of new medical treatments, the protection of biodiversity, advancements in traditional and allopathic remedies and, ultimately, improved access to health care. Faculty Sponsor: Jason Pribilsky

Rhetoric and Socioeconomic Class

Kimball Theatre

Paige Joki, moderator

Nicky Khor, coach

Jonathan Barsky | Clinton 2012: Neoliberalism and Opportunity Rhetoric 9 a.m.

Bill Clinton's keynote address at the 2012 Democratic National Convention received national praise and was viewed as a victory for Barack Obama's re-election campaign. In spite of the progressive label often attached to the Obama Administration and its policies, I propose that Clinton's speech encouraged the public to vote for President Obama on the basis of neoliberal policies, which were justified by appeals to the rhetoric of opportunity and the American dream. My research explores how this type of discourse can be used by politicians to generate winning electoral coalitions and how Clinton's rhetoric helps to reinforce economic inequality within the United States. I demonstrate the material consequences of this rhetoric by examining how it encourages the public to adopt policies that trap socioeconomically depressed households in a cycle of dependency with an ever-shrinking set of government services. Faculty Sponsor: Heather Hayes

Fernando Medina Corey | The Power of the Pundit: How Conservative Logic Disenfranchises Women and Caregivers 9:15 a.m.

In February 2012, Georgetown law student Sandra Fluke testified during an informal Congressional hearing about the difficulties women without health insurance face obtaining oral contraception. Several days after her testimony, Fluke received a raft of vicious criticism from conservative news pundits who described her as a "slut" and "prostitute" who "wants to [be paid] for all of her sexual activities." My presentation critically examines this rhetoric. I argue that, in addition to its sexist and patriarchal overtones, this criticism draws on subtle but pervasive forms of logic that hinder women from realizing economic and social equality. I examine the ways in which these media responses to Fluke's testimony construct inaccurate and harmful representations of women and caregivers, disregarding the contributions they make to society while simultaneously ingraining expectations that they continue to contribute in these unrecognized ways. Faculty Sponsor: Heather Hayes

Elana Simon | Goodwill? Capitalist Constructions of Disability and Neoliberal Inclusion Tactics 9:30 a.m.

More than 4,700 workplaces across the United States pay some of their employees less than minimum wage because those workers are disabled. An exemption within the Fair Labor Standards Act (FLSA) of 1938 allows employers to compensate an employee based on their "productive capacities" if the worker is deemed "disabled for the work they are to perform." My presentation examines how the state's representation of the disabled within the FLSA corresponds to contemporary discourse surrounding Goodwill's employment practices, which justify paying disabled workers subminimum wages. In mirroring the state's representation of the disabled, Goodwill changes the meaning of work for the disabled under the guise of inclusivity. I argue that, in echoing the FLSA's logic, Goodwill rhetorically frames the

opportunity to work for sub-minimum wages as a potential for self-fulfillment and gateway towards social membership, only to reinforce the exclusion of disabled persons from society. Faculty Sponsor: Heather Hayes

Emma Nye | Behind the Veil: The Niqab as Microcosm of Islamophobia as Western Doxa
9:45 a.m.

This past September, Birmingham Metropolitan College in England banned women from wearing the niqab, rekindling a latent debate over a larger ban of the niqab throughout Britain. The commonly held view ties the niqab to gender inequality, female oppression and the Islamification of the West. I argue that these views are grounded in Islamophobia, which has become normalized in Western cultures as doxastic knowledge, in which closed views of Islam go unchallenged. Britain's debate over the niqab serves as a microcosm of this doxa and reflects a Western regression into the "white man's burden" mentality of colonial times cloaked in arguments supporting gender equality. Ironically, Britain's attempt to provide Muslim women with gender equality serves to silence Muslim women by widening the rhetorically crafted gap between "overly traditional" Islam and "modern" Britain. Faculty Sponsor: Heather Hayes

Paige Joki | Mother Dearest, Miracle Workers or Monsters: Public Reception to Kate Gosselin's and Nadya Suleman's Depictions of Motherhood 10 a.m.

I examine the disciplinary power that "The Oprah Winfrey Show" has in producing discourse surrounding "good" and "bad" mothers. Kate Gosselin's and Nadya Suleman's ("Octomom") appearances on "Oprah" illustrate the ways that reality TV reproduces Foucault's concept of governmentality by teaching subjects how to govern, regulate and surveil themselves without the direct influence of the state. I analyze how the rhetoric produced on "Oprah" created different public receptions to Nadya and Kate. Kate rises to the level of "Supermomdom," while Nadya becomes rhetorically constructed as a social menace, the "Octomom." The discourse produced about each mother supported Kate and labeled Nadya as a pathological social poisoner in need of intervention. Thus, Kate and Nadya become living representations of the "good mother"/"bad mother" dichotomy. I contend that this discourse extends far beyond "Oprah" and affect the ways we govern ourselves. Faculty Sponsor: Heather Hayes

Politics and Power Struggles

Reid G02

Keiler Beers, moderator

Jessica Van Horne, coach

Maxwell Reikosky | Tibetan Refugee-Nepali State Relations: History, Chinese Influence and Implications 9 a.m.

My research in Nepal was dedicated to understanding the relationship between Nepal-based Tibetan refugees and the Nepali state, specifically, how Chinese influence has affected this relationship. As Source A, an employee of the Human Rights Organization of Nepal, says, "Money talks these days." This simple saying has proven true in the last decade as authorities continue to restrict the freedoms of Tibetan refugees, already without political or economic support, in exchange for Chinese aid and investment. Nepal has become less of a refuge for refugees and more the epitome of extended Chinese policy regarding the treatment of Tibetans. My knowledge of this dynamic was gleaned with the help of Nepal-based Tibetans operating under these repressive conditions and current experts on the subject, along with a personal investigation into a surveillance camera installment in Boudha, a predominantly Tibetan district in the Kathmandu Valley. Faculty Sponsor: David Schmitz

Colin Strong | Water, Energy and Power: Hydropower Politics in Yunnan, China 9:15 a.m.

My presentation examines the forces behind hydropower construction in the Chinese province of Yunnan, charting recent shifts in hydropower politics. Yunnan is remarkable for its abundant, exploitable natural resources, high rural poverty and biodiversity. Such a region affords China the potential to establish a new model for sustainable development. Dam construction is an example by which to study these intersecting needs and understand Chinese government priorities and methods. I survey the many groups clashing over Yunnan's hydropower politics: central and local government officials, local people, environmental NGOs and down-river nations. Over the past decade, battles between these groups caused multiple shifts in Yunnan's hydropower policy. 2004 saw the success of NGO and local protests against dam construction as China's premier declared a moratorium on dam construction. Early 2013 saw the reversal of this moratorium and dam projects move ahead despite continued protests by several groups. Faculty Sponsor: Brian Dott

Forrest Watkins | Dualities of Catalan Identity in Carlos Ruiz Zafón's *"El cementerio de libros olvidados"* 9:30 a.m.

In his triology *"El cementerio de los libros olvidados"* that comprises *"La sombra del viento"* (2001), *"El juego del ángel"* (2008) and *"El prisionero del cielo"* (2011), Carlos Ruiz Zafón constructs a vivid image of the city of Barcelona in the era of the Spanish Civil War. Zafón's prose uses Gothic and modernist descriptive techniques to subvert the idea of objective truth and reveal a city divided. Zafón responds to ideas voiced by the Catalonian elite through the early 20th century Noucetisme movement, which emphasized objectivism and a central state. These notions reflect a conflict of ideologies that was strongly linked to the era's class struggle. Zafón's text emphasizes the city's collective experience and the subjectivity of truth in the context of Spain's civil war, representing a continued revival of Catalonian nationalist identity in the post-Franco era. Faculty Sponsor: Janis Breckenridge

Keiler Beers | "Esclavitud en Arizona": Immigrant Detention as Systemic Neoslavery 9:45 a.m.

Slavery is commonly conceptualized as a limited form of chattel slavery that existed in the pre-Emancipation antebellum South. However, the 13th Amendment that abolished slavery also includes a clause that permits enslavement as "an appropriate punishment for a crime." It is through this lens that I examine the disproportionate rise of racialized incarceration, and the subsequent privatization and profiteering that has exploded in recent years, as a form of contemporary slavery. Using an analysis of immigrant detention on the U.S.-Mexico border, I argue that our immigration system acts as a form of racial control and neoslavery, and that such a conclusion necessitates a radical restructuring of our national dependence on criminalization and enslavement. Faculty Sponsor: Jack Jackson

session 2

10:45 a.m.-noon

State of the State I

Olin Hall 130

Keiler Beers, moderator

Caitlin Rooney, coach

Claire Johnson, Isabel Zarate, Leslie Rodriguez, Claire Collins, Andrea Berg, Maricela Sanchez-Garcia, Joshua Rubenstein, Kathleen McMurchie, Keiler Beers | Initiatives Addressing Systemic Marginalization of At-Risk Youth in Walla Walla 10:45 a.m.

Youth in Walla Walla face multiple and intersecting vulnerabilities that lead to their marginalization from core social institutions. Three teams in Whitman's community-based program, State of the State for Washington Latinos, conducted projects reporting on current local efforts to reach such youth, using the following case studies. Low-income students who used the health center at Lincoln High School received necessary medical care, but the center faces difficulties billing for the treatment provided. Former gang members utilized a tattoo removal program as a gateway

to positive lifestyle changes, yet they still face barriers to their reintegration into a community that often regards them with fear and disdain. Students of the Alternative Education Program at Walla Walla Community College found success after struggling in traditional schools. Our research suggests the promise of initiatives that address the difficulties facing youth as well as the need for greater funding and recognition of such programs. Faculty Sponsor: Paul Apostolidis

Japan: History, Economy, Culture

Olin Hall 157

Megan Murayama, moderator

Duy Tran, coach

Jennifer Dardis, Jadelyn Martinez | Naginata: A Traditional Japanese Martial Art 10:45 a.m.

Many people recognize Japanese martial arts such as judō or kendō, but few recognize the art of naginata, an ancient Japanese weapon first used by warriors (samurai) and armed monks (sōhei) in 12th century Japan. The naginata consists of a wooden shaft topped with a curved blade and was an important weapon of choice for warriors during the 11th and 12th centuries. During the Edo period (17th and 18th centuries), this weapon became an important weapon and symbol for women in the samurai class. Today, the art of naginata remains popular among women. While studying for two semesters in Kyoto in the Associated Kyoto Program, we trained with the Kyoto Naginata Club and learned its techniques and history. We introduce naginata and present the results of our training. Faculty Sponsor: Akira Takemoto

Kirsten Valaas | Where is Okinawa? 11 a.m.

Long before Okinawa became a part of Japan, this small archipelago existed as a separate kingdom that historians now call the Ryukyu Kingdom. Indeed, prior to its annexation in 1879, Okinawa was an independent state that connected China and Japan. Although people recognize the name of this kingdom, few know the role that this island played in World War II, the Battle of Okinawa and the establishment of U.S. military bases on Okinawa after the war. Even fewer people know about how Japan colonized the island and treated the people of this island with contempt, forcing them to accept Japanese as their official language and asking them to become loyal subjects of the emperor of the Japanese empire. My presentation uses Okinawan history as a frame by which to understand the current controversy regarding the Bell Boeing V-22 Osprey crafts. Faculty Sponsor: Akira Takemoto

Stephen Uramoto | Growth and 'Abenomics': Post-war Japanese Economic History 11:15 a.m.

From post-World War II to the early 1990s, Japan saw tremendous economic growth. This growth was largely jumpstarted by postwar rebuilding and restructuring overseen by occupying U.S. forces. But Japan was able to sustain this growth even after the end of the occupation. This trend lasted until the late 1980s, when the Bank of Japan, the country's central bank, perceived an asset bubble and attempted to stave it off. Many believe that this event lead to a recession. Since that time, Japan's economy has not sustained the same level of growth, resulting in high unemployment throughout the country. My presentation explores post-war Japanese economic history and what people refer to as Prime Minister Shinzo Abe's "abenomics." I consider what this development means for the Japanese economy in light of Japan's so-called "lost decades." Faculty Sponsor: Akira Takemoto

MaryAnne Bowen | Cosplay: Restructuring Community 11:30 a.m.

Cosplay (costume and play), a well-known phenomenon in Japan, is typically understood as the act of dressing up as different characters from anime and video games. My presentation complicates this view by exploring the space of Tokyo's biannual comic market, Comiket, where a large number of the participants cosplay. I examine the ways in which the space of Comiket allows for the dissolution of hierarchical divisions between the actor and the viewer, the original (characters) and the copy (cosplayers), the producer and the consumer. The single perspective point vanishes and a level playing field is created. Furthermore, unlike theater, the participants are not following a specific script or story but instead spontaneously creating pieces of "story" based on their interactions with others. Through my analysis

I hope to show how Comiket sets the stage for the emergence of a new kind of community. Faculty Sponsor: Yukiko Shigeto

Megan Murayama | Flip-Flopping : A Vampire, a Cannibal and My Quest to Create a Fandom 11:45 a.m.

To study Japanese, my friend and I created two characters called Kyuuketsuki-kun (Little Master Vampire) and Hitokui-chan (Friendly Little Cannibal). We wrote dialogues and performed short skits for our language classes, and these characters became a part of my Japanese language life. In my presentation, I link my interests in Japanese, translation theories, digital art, two- and three-dimensional art, anime, manga and cosplay to develop a studio art project that plays with the idea of "flip-flopping" the digital and the physical, the online and the offline, the fictional and the real. By creating and spreading stories about these characters, I plan to start a fan base, print out comments and compile them in books. In this way, I explore the idea of moving between the digital and the physical, as I bring Kyuuketsuki-kun and Hitokui-chan out of the internet and into the gallery space. Faculty Sponsor: Akira Takemoto

Birdsong, Snail Trails and Habitat

Science 159

Marika Lou, moderator

Ian Becker, coach

Laurel Low | Wetland Invaders: Apple Snails' Response to Stress Conditions 10:45 a.m.

The invasion of exotic species threatens ecosystems, especially wetlands. Apple snails (*Pomacea maculata*), invasive large fresh water snails, can cause substantial herbivore damage on wetland plant communities leading to negative economic and ecological impacts. Having spread to eight southeastern states, apple snails are a serious threat, especially in the Mobile-Tensaw Delta, Ala. We studied apple snail response to the combined effects of salinity and non-choice feeding on plant species common to the Mobile-Tensaw Delta area. To determine the impacts of these stressors, we analyzed consumption, reproduction rates and behavior. These results can, in conjunction with other studies, be applied to future management and restoration of wetlands in areas invaded or in danger of invasion by apple snails. Faculty Sponsor: Arielle Cooley

Phoebe Horvath | Are There Black Swifts in Wyoming? The Applicability of a Predictive Habitat Model 11 a.m.

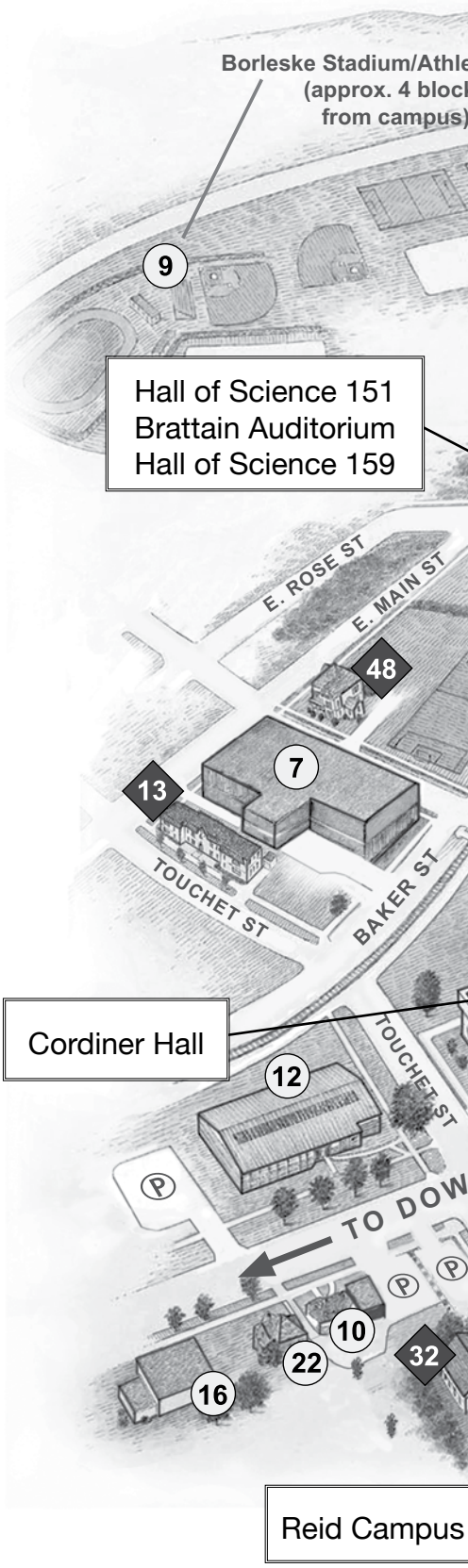
The nesting range of the American black swift is not fully known; individuals breed in low densities in California, SW Canada/SE Alaska, Colorado and outlying locations. They nest almost exclusively near shaded, year-round waterfalls. They have specific criteria for nesting; in Colorado, probability of occupancy can be determined using specific habitat information. We surveyed Wyoming for breeding colonies and collected habitat information but did not detect any colonies. Using the Wyoming habitat data and Colorado habitat suitability model, we assessed Wyoming waterfalls for black swift suitability; according to the model, 20 percent of our sites had ≥85 percent chance of occupancy. We analyzed survey data from Colorado and found that our survey method, when used in Colorado, had a 55 percent chance of detecting swifts when present. We determined there is low likelihood of black swifts nesting in Wyoming, with explanations including low habitat density, isolation and decreasing population. Faculty Sponsor: Timothy Parker

Sabrina Rodriguez | What is the Link Between Mature Forests and the Northern Goshawk? A Meta-Analysis 11:15 a.m.

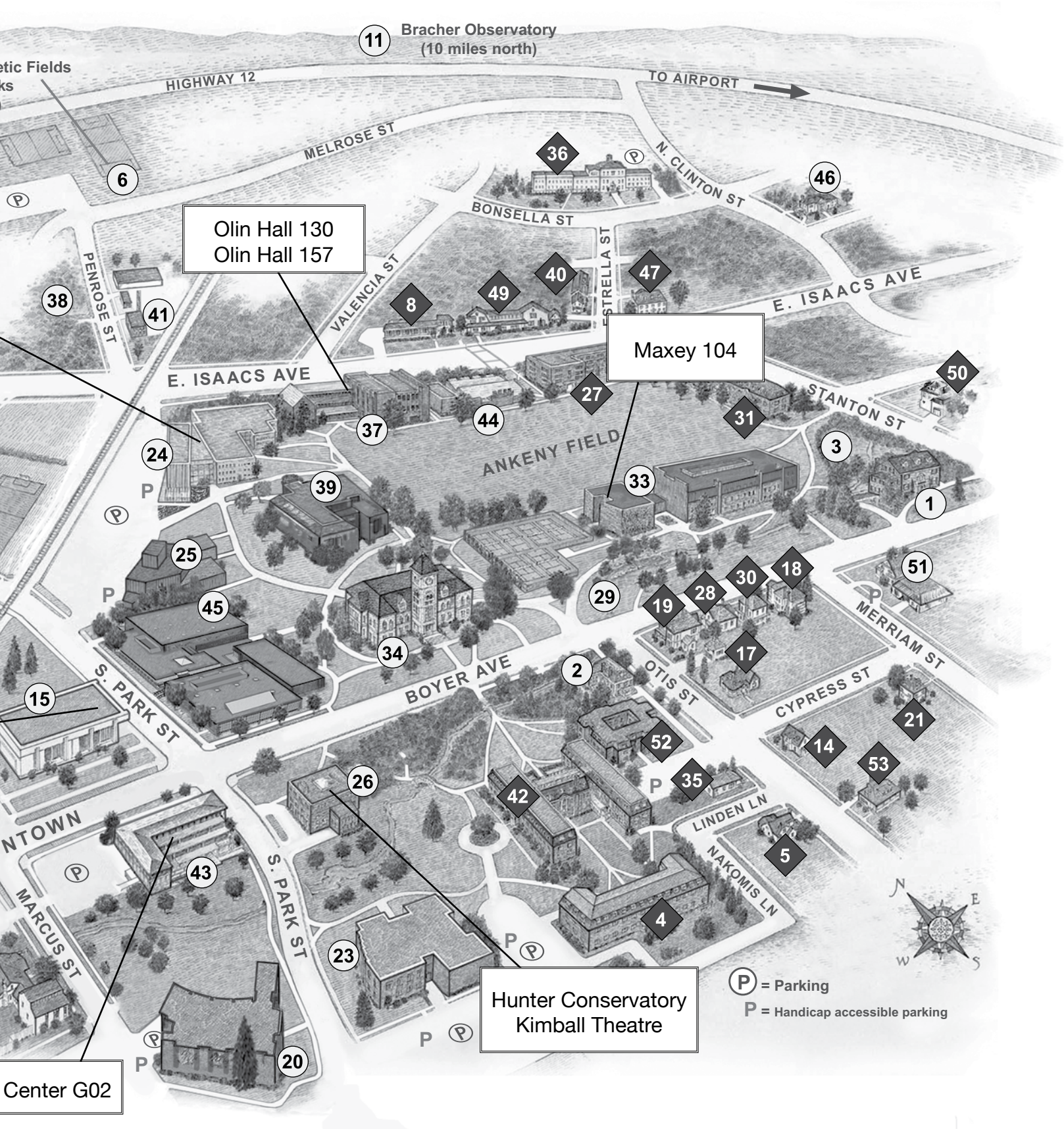
Certain environmentalists assert that the northern goshawk (*Accipiter gentilis*) relies on old growth forests and its population declines with timber harvest. Whether tree harvest harms goshawks, for example, by reducing reproductive output, remains uncertain. The U.S. Forest Service currently lists the northern goshawk as a sensitive species which affords nesting goshawks some protection from timber harvest. However, these environmentalists want the goshawk listed as an endangered species, which would more effectively prevent timber harvests. For my meta-analysis,

venues

1 Admission and Financial Aid (Penrose House)
2 Alumni Relations and Annual Giving (Baker Center)
3 Amphitheatre
4 Anderson Hall (residence hall)
5 Asian Studies House (interest house)
6 Athletic Complex (outdoor fields)
7 Baker Ferguson Fitness Center/Harvey Pool
8 Beta Theta Pi (fraternity house)
9 Borleske Stadium
10 Boyer House (Office of Communications)
11 Bracher Observatory (astronomy facility)
12 Bratton Tennis Center
13 College House (residence hall)
14 Community Service House (interest house)
15 Cordiner Hall (auditorium)
16 Dance Studio
17 Das Deutsche Haus (interest house)
18 Environmental House (interest house)
19 Fine Arts House (interest house)
20 Fouts Center for Visual Arts
21 Global Awareness House (interest house)
22 Glover Alston Center (intercultural resources and programs)
23 Hall of Music (includes Chism Recital Hall)
24 Hall of Science (includes Brattain Auditorium)
25 Harper Joy Theatre (includes Alexander and Freimann stages)
26 Hunter Conservatory (includes Kimball Theatre)
27 Jewett Hall (residence/dining hall)
28 La Casa Hispana (interest house)
29 Lakum Duckum
30 La Maison Française (interest house)
31 Lyman House (residence/dining hall)
32 Marcus House (residence hall)
33 Maxey Hall (social sciences)
34 Memorial Building (administration)
35 Multi-Ethnic Center for Cultural Awareness (MECCA/interest house)
36 North Hall (residence hall)
37 Olin Hall (humanities and mathematics, technology services)
38 Organic Garden
39 Penrose Library
40 Phi Delta Theta (fraternity house)
41 Physical Plant Services
42 Prentiss Hall (residence/dining hall)
43 Reid Campus Center (student services/café)
44 Sheehan Art Gallery
45 Sherwood Athletic Center (climbing wall)
46 Sherwood House (president's residence)
47 Sigma Chi (fraternity house)
48 Tamarac House (residence hall)
49 Tau Kappa Epsilon (fraternity house)
50 Tekisuijuku (interest house)
51 Welty Center (counseling and health services)
52 William O. Douglas Hall (residence hall)
53 Writing House (interest house)



Whitman College



I assembled all published data on the relationship between goshawk reproduction and measures of tree size or timber harvest to evaluate my hypothesis that goshawk reproductive output is greatest when nesting in stands of large, mature trees. This study will provide the most comprehensive assessment available on the effect of tree harvest on goshawk reproduction. Faculty Sponsor: Timothy Parker

Ysabel Diaz | Songbird Species Richness in an Arid Landscape: How Artificial Water Affects Species Richness 11:30 a.m.

Since the late 1800s, commercial cattle ranching has been a part of the Paria Plateau landscape in north central Arizona. As a result, water troughs have been added to the landscape to accommodate commercial cattle living in the desert. My research investigated the relationship between this artificial water and desert songbirds, questioning if distance from artificial water had any effect on the number of songbird species. Based on data collected this past summer by Marijke Wijnen and myself, no relationship was found between artificial water and the number of songbird species. From these results, I address the ways in which desert songbirds can live in the desert with minimal water, highlighting the impressive adaptations of these birds. Faculty Sponsor: Timothy Parker

Marika Lou | Hummingbird Weight Compared to Wing Morphology Across Dominance Hierarchies in Costa Rica 11:45 a.m.

Among birds, hummingbirds are unique in their ability to employ various flight modes, including sustained hovering and backwards flight. These necessitate competing wing morphologies, however, making every wing a compromise. Additionally, every animal that flies must have a wing design that will support its weight, which is especially relevant in hummingbirds when they hover to feed and chase other hummingbirds in competitive interactions. I sought to determine if, and to what extent, weight drives wing morphology of different hummingbird species, and then to compare morphological and aerodynamic trends with existing dominance hierarchies of the species present at two study sites in Costa Rica. Hummingbirds were mist-netted in the Monteverde area (the Monteverde Reserve and Selvatura Park) and Cerro de la Muerte, and results showed that morphological and aerodynamic trends differed among the dominant species in each location, indicating that the morphology of a dominant species is context-dependent. Faculty Sponsor: Delbert Hutchison

Disease and Cure

Science 100

McKenzie Momany, moderator

Jake Lindsay, coach

Alexander Honeyman | The Curling of Blood as a Physical Indicator of Disease in the Pulmonary Artery 10:45 a.m.

As the mechanical engine of our respiratory system, the heart must deliver blood at an appropriate rate and pressure so that diseases do not arise. Currently, the diagnosis of pulmonary arterial hypertension (PAH: high blood pressure in the artery moving deoxygenated blood from the heart to the lungs) requires an invasive procedure wherein the pressure of the blood is physically measured by placing a probe in the heart. Cardiac MRI, however, is a new, non-invasive technique being explored that can generate flow data for patients' hearts. Analysis with post-processing software allows quantification of physical properties of the blood flow (such as curl). Specifically, the MRI determination of vorticity (the tendency for fluids to curl in a flow field) may prove to be a novel, and less risky, way to both diagnose patients and understand the progression of the disease. Faculty Sponsor: Christopher Wallace

Carol Pengshung | Tuberculosis Antigen Discovery 11 a.m.

Tuberculosis (TB) is the second leading cause of mortality worldwide due to a single infectious agent. One in three people in the world is infected with Mycobacterium tuberculosis and have latent TB. Because of acquired immunodeficiency syndrome (AIDS) and new drug-resistant TB strains, the World Health Organization declared TB to be a global emergency. The BCG vaccine is the current and only TB vaccine in use. The BCG vaccine, which was

introduced in 1921, has variable effectiveness and only works in children. In my research at the Infectious Disease Research Institute, I produced proteins from TB genes and isolated and purified them for testing as potential antigens for a new protein-based TB vaccine candidate. Faculty Sponsor: James Russo

Katherine Runkel | Developing an Antigen Expression Cell Line for Dengue Virus and West Nile Virus 11:15 a.m.

There are currently 2.5 billion people around the globe estimated at risk of dengue infection, and West Nile virus has spread to 48 states since 1999. Both dengue virus and West Nile virus belong to the Flavivirus genus and are arboviruses, meaning they require a blood-sucking arthropod to continue their life cycle. Currently there is no human vaccine available for either of these viruses. In order to make a successful vaccine, scientists require the pathogen's antigen, which is then recognized by our body's immune system to help fight the infection. My project, conducted at the Infectious Disease Research Institute, was to develop an antigen expression cell line for both dengue and West Nile virus for further vaccine development research. This project highlights molecular biology and biochemistry techniques used in vaccine development. Faculty Sponsor: James Russo

Nathan Radakovich | Looking for the Fingerprints of Graft Versus Host Disease 11:30 a.m.

Bone marrow and stem cell transplants are invaluable in the treatment of cancers like leukemia. However, these transplants frequently trigger graft versus host disease (GVHD), a condition where donor tissues attack the host they have been transplanted into. The onset of GVHD is thought to be driven in part by immune cells known as CD8 T cells, which possess a set of diverse proteins called T cell receptors (TCRs) that allow them to recognize, and subsequently attack, foreign cells with exquisite specificity. One of the current efforts in GVHD research is to identify recurring patterns of TCR expression across instances of GVHD in order to better understand the disease's progression as well as to better diagnose it. My presentation details the research I participated in as part of the investigation of these patterns. Faculty Sponsor: Daniel Vernon

McKenzie Momany | Quantity and Quality Control of RNA Isolated from Foreskin, Rectum and Colon Samples from an HIV Vaccine Trial 11:45 a.m.

HVTN914 Trial aims to quantitate immune activation in foreskin, blood and rectosigmoid mucosa from HIV-negative, uncircumcised men who have sex with men and who are at high risk for HIV acquisition. RNA of high quality and quantity must be isolated to quantitate rare immune transcripts present in these tissues. I isolated RNA from human foreskin, colon, rectum and blood samples to evaluate the RNA yield and quality. Results indicated that 91 percent of the samples met the required quality and quantity standards for future tests and could therefore be assessed by Reverse Transcription Polymerase Chain Reaction (RT-PCR). I then amplified an endogenous control mRNA to determine the effects of RNA contaminants. The blood samples amplified more rapidly than the other tissue types, indicating that RNA contaminants do affect the results of RT-PCR. Future work will need to take these effects into consideration when quantifying differential expression of immune transcripts. Faculty Sponsor: Daniel Vernon

Secrets of the Deep

Science 151

Meghan White, moderator

Michelle Flores, coach

Daniel Zajic | Novel Osmolyte in Atlantic Salmon (*Salmo salar*) as a Potential Biomarker of Freshwater-Seawater Transition 10:45 a.m.

Organic osmolytes are small solutes that increase osmolality inside cells to stop osmotic water loss without disturbing cellular functions and, in some cases, to stabilize proteins against denaturants like urea, salt and pressure. The current study was undertaken to examine the osmolyte profile of Atlantic salmon (*Salmo salar*). High-performance liquid chromatography identified osmotically significant levels of taurine and an unknown compound in fins and skin of *S. salar,* at levels (from highest to lowest): juveniles (six months old) acclimated three weeks in seawater (SW) > young

adults (nine months old) acclimated three months in SW > juveniles (six months old) in freshwater (FW) > adults (24 months old) kept two years in SW. Currently, gill Na/K-ATPase levels are measured at farms to determine when salmon should be moved from FW to SW. We suggest this unknown osmolyte might serve as a biomarker for the salmon industry as indicator of readiness for FW to SW transition. Faculty Sponsor: Paul Yancey

Kathryn Zajicek | Detecting Toxins with Fish Chromatophore Cells 11 a.m.

Water safety is a primary health concern, and rapid detection methods of chemical toxicants are needed. Biosensors are under investigation as a cell-based detection system. One such potential biosensor is the chromatophore cell of Siamese fighting fish (*Betta splendens*). Chromatophore cells are responsible for color patterns of fish due to movement of their internal pigment organelles in response to external stimuli. Paraquat, an herbicide toxic to humans, and cyanide are known to stunt pigment movement, preventing these cells from being used as biosensors for toxin detection. Previous research suggests that adding ATP, a metabolic energy source, may help reintroduce movement. In my research, conducted at Oregon State University, I found that introducing ATP to chromatophore cells in the presence of paraquat or cyanide did induce pigment movement as hypothesized. This suggests that in these conditions chromatophore cells can be used as biosensors of paraquat and cyanide. Faculty Sponsor: Paul Yancey

Nilce Alvarez Carreno | Analysis of Trace Elements Across Reef-Building Coral Genera 11:15 a.m.

Reef-building corals are home to one third of all marine flora and fauna, and a hard calcium carbonate skeleton provides the coral with support. The variation across genera of metals, such as calcium, strontium and magnesium, incorporated into the coral skeleton remains unknown. Moreover, in a constantly changing world, it is urgent to understand the influence of shifting oceanic conditions on coral reefs and their biogeochemistry. Samples from Mo'orea, French Polynesia, were used and examined by Environmental Scanning Electron Microscopy and Energy Dispersive Spectroscopy for imaging and data analysis. This study will help widen the complex and insufficiently explored comparative coral skeletogenesis and the impact of skeletal composition and morphology on coral survival and health across scleractinian genera. Faculty Sponsor: Allison Calhoun

Lucas Ramadan | Comparing Protein Content Among Scleractinan Coral Genera 11:30 a.m.

Within the last 30 years, roughly 50 percent of the world's coral reefs have been destroyed. In attempting to understand ways in which coral reefs can come to thrive, one must understand their growth process. It is well understood that coral species grow their carbonate skeletons by incorporating ions present in seawater. While most precipitation of calcium carbonate forms an amorphous or calcite structure, corals are able to precipitate aragonite. Since the precipitation of aragonite is less thermodynamically favorable, corals utilize proteins to kinetically control the precipitation process. However, studies examining protein content across multiple genera of corals are currently lacking in the scientific community. Our research utilizes multiple thermoanalytical techniques in an attempt to compare protein content among different coral genera. With information on differences between coral genera, we contribute to the scientific community's understanding of coral, which ultimately brings coral reef recovery one step closer. Faculty Sponsor: Allison Calhoun

Meghan White | Investigating the Role of Trehalose Within the Symbiosis Between Coral and Dinoflagellete Algae 11:45 a.m.

Corals have a unique symbiosis with dinoflagellate algae. In this mutualism, corals provide protection, nutrients and CO2 for the algae, while the algae provide O2 and sugars to the corals through photosynthesis, allowing corals to build reefs. How these partners come together is not fully understood. With coral reefs around the world rapidly dying, understanding coral nutrition and the development of this symbiosis is crucial. At the Hawaii Institute of Marine Biology (Coconut Island, Oahu), we tested the hypothesis that the stable disaccharide trehalose plays a role. We found that pellets expelled by wild and laboratory Fungia scutaria (mushroom) corals near spawning time contained live dinoflagellates that release trehalose. Larvae also have trehalase to metabolize trehalose and follow a trehalose gradient in a Y-maze. We propose that the pellets are the answer to how these two partners meet initially: Trehalose is made by dinoflagellates as a chemoattractant. Faculty Sponsor: Paul Yancey

Religious Perspectives and Culture

Maxey 104

Janaki Phillips, moderator

Simon Giloi, coach

Molly Johanson | The "C" in YMCA 10:45 a.m.

At the turn of the 20th century, the Young Men's Christian Association, or YMCA, was at the peak of its success as a student movement and was one of the most popular and influential groups on college campuses nationwide. In addition to conducting bible study classes and sponsoring social events, YMCA members met incoming freshmen upon their arrival to campus and helped them find housing and work – needs that no one met before the rise of student services. Whitman's branch of the YMCA, however, constantly struggled throughout its tenure on campus, much to the distress of President Stephen Penrose. I will compare its struggles with the much more popular Young Women's Christian Association (YWCA) in order to shed light on the religious life of Whitman students during the early years of the 20th century. Faculty Sponsor: Rogers Miles

Alissa Becerril | Evolution as Taught by the Whitman College Biology Department in the Early 20th Century 11 a.m.

What were biology classes at Whitman College like 100 years ago? H.S. Brode was the first biology professor at Whitman and introduced the controversial theory of evolution into the biology curriculum. As a professor and an active leader in the local Methodist church, Brode was among a larger group of believers and intellectuals who held that the theory of evolution did not conflict with religious truths that the college upheld. Understanding Brode's reasoning to support the harmonious relationship of religion and science provides a better appreciation of how today's religion-free curriculum in the biology department has developed from a scientific era heavily influenced by religion. Through archival research at Whitman, I shed light on these issues. Faculty Sponsor: Rogers Miles

Benjamin Menzies | Dissenting Saints: Power, Authority and Conflict in the Church of Jesus Christ of Latter-day Saints 11:15 a.m.

When viewed as an outsider, the Church of Jesus Christ of Latter-day Saints, also known as the Mormon Church, can appear a monolith of strict authority and conservative doctrine. This popular perception masks a rich history of conflict within the church over the proper relationship between the church, God and the individual saint. My presentation explores key moments of conflict in the history of the church, including the succession crisis following the murder of the church's first prophet, Joseph Smith, Jr.; the controversy surrounding the practice of plural marriage and subsequent prohibition by the church; and recent fights over the relationship between scholars and the church. Grounded in history, my presentation considers a theoretical framework to analyze Mormon authority, including changing conceptions of revelation, the family, the temple and God. Faculty Sponsor: Daniel Kent

Janaki Phillips | Retrieving the Lost Souls of Modernity: Neo-Shamanic Practice 11:30 a.m.

Since the 1980s shamanism has experienced a global renaissance after being both a popular and an academic dead issue for decades. This resurgence includes increased scholarly attention as well as an increase in practice and new forms of shamanism, particularly neo-shamanism in the West. By asking the question "How do contemporary shamanic practitioners interact with modernity?" I hope to disentangle more than just the ways contemporary practitioners have appropriated or adapted shamanism to fit their contexts. I also want to convey what shamanism has to offer modernity in way of social critique. I focus on core shamanism, one such "brand" of neo-shamanism. Developed by anthropologist-"gone-native" Michael Harner, core shamanism draws from multicultural techniques – such as drumming to attain an altered state of consciousness – to form a distilled set of practices for a Western audience. I will discuss both the Western assumptions and potential for social critique embedded within core shamanism. Faculty Sponsor: Jason Pribilsky

Documentary Environmentalism

Kimball Theatre

Molly Hayes, moderator

Kyle Hendrix, coach

Faith Bernstein, Keenan Hilton, Chase Martin, Molly Hayes | "The Beaver Believers": A Story of Inspired Activism, Cuddly Critters and Hope in a Warming World 10:45 a.m.

With carbon dioxide in the Earth's atmosphere measuring 400 parts per million and rising, climate change has become a reality and adapting to it a necessity. Most climate-change reporting is full of gloom and doom; "The Beaver Believers," a film produced by a crew of Whitman students, a local filmmaker and a Whitman politics professor, is different. The film tells the story of five environmental activists who learned to stop worrying about climate change and do something creative to better cope with our challenging future. Four Whitman student interns will share footage and discuss how their interdisciplinary studies converged in the making and meaning of the project. The presentation will explore the students' diverse motivations, technical roles and reflections on the process of making this environmental documentary. Faculty Sponsor: Phil Brick

Film and Media Studies II

Reid G02

Noelle Butler, moderator

Nicky Khor, coach

Thomas Barber | Illegal, Immoral or Just Insane: Interactivity and "Grand Theft Auto V" 10:45 a.m.

What can sticky bombs, tear gas and a stun gun tell us about ourselves? I discuss the latest in the Grand Theft Auto video game series, "Grand Theft Auto V." The series is widely criticized for its portrayal of drugs, sex, violence and the ease with which the player can perform immoral or illegal actions. What these critiques fail to recognize is that video games are escapist media. I argue that video games create a simulated environment in which the consequences of actions are eliminated. The player can perform actions and act out desires they wouldn't carry out in real life. I also argue that each of the game's three protagonists embodies an element of the human psyche. Players recognize the behavior they are participating in as illegal or immoral. Through this interaction they are forced to interrogate how it relates to their own real-world ideology. Faculty Sponsor: Anne Petersen

Nicholas Roberts | The Flicker Effect and Kanye's Contemporary Perceptive Redundancy 11 a.m.

In my presentation I explore how the original purpose of the "flicker effect" for structural artists – to produce apperception through non-redundancy – is effectively inverted by the current exploitation of its visual aesthetic in the creation of definitively perceptive media objects. I first investigate the origin of the flicker through the rise of apperceptive filmic objects in the structural film movement. After establishing an understanding of the use of flicker in the late 1960s, I discuss Paul Sharits' final flicker films, "T,O,U,C,H,I,N,G" and "N:O:T:H:I:N:G," in relation to Kanye West's performance of "Black Skinhead" on Saturday Night Live. Finally, I explore the critical rhetoric surrounding West's artistry and the problems with overt proclamations of West's "genius" implied by the "redundancy" inherent in contemporary flicker mimicry. Faculty Sponsor: Anne Petersen

John Coppinger | The Economics of Cultural Exchange: How Bourdieu's "The Forms of Capital" Explains the Current State of Hollywood 11:15 a.m.

In Forbes magazine's report, "The Highest Paid Actors of 2013," only two of the listed actors were not involved with an active "franchise," a series of films building from an existing or pre-existing canon. This finding reflects a prevail-

ing dynamic in the industry, whereby studios rely on a proven stream of franchise-based popular characters or proven brands to generate revenue. Such a climate seems to disproportionately favor major studios, concentrating the wealth of Hollywood in the hands of a few major production firms. The work of French sociologist Pierre Bourdieu contradicts this perception. Focusing my analysis primarily on actor Brad Pitt, who now owns and operates his own production studio, Plan B Entertainment, I apply Bourdieu's concept of cultural capital to suggest that it is the most potent and important asset in Hollywood today. Faculty Sponsor: Anne Petersen

Nathan Fisher | "Gravity": The Next Chapter in Reality on Film 11:30 a.m.

Throughout the history of cinema, the filmmaking process has adapted and grown. Film technology has worked toward a complex "lived experience" of the world by moving through five paradigm shifts (the photograph, early film, color, the steadicam and the CGI used in "Avatar") to create a heightened sense of reality. Cinema has gradually grown closer to a mimetic representation of reality, becoming more and more immersive and lifelike. Presently, movies share this experience of immersive reality with the audience. Most recently, the technology used in "Gravity" blurs the line between what is real and what is created, making audiences believe they are in space without leaving the theater. I argue that "Gravity" represents the next chapter in the advancement of film technology, showcasing the latest paradigm shift in mimesis by creating a representation of reality that otherwise could not be made. Faculty Sponsor: Anne Petersen

Noelle Butler | Whatever Happened to the Co-Director? Jean-Pierre Jeunet and the Auteur Theory 11:45 a.m.

In this presentation, I analyze Jean-Pierre Jeunet's status as an auteur through three avenues: the film industry, academia and public reception. I present the case of Jeunet's co-director, Marc Caro, discussing his lack of recognition and questioning whether Jeunet's signature style is truly his. I consider Audrey Tautou as a subject of Jeunet, and the fact that she, while only starring in two of his films, is considered by viewers and critics to be an essential element of his style. I then problematize the framework of Jeunet's auteurism with "Alien: Resurrection" (1997), which lacks what many consider to be Jeunet's style. Ultimately, I argue that Jeunet has been unproblematically framed as an auteur, which has resulted in complicating the understanding of his auteurship and demonstrates the flaws of the auteur theory and its negative effects on the film industry. Faculty Sponsor: Anne Petersen

session 3
2 p.m.-3:15 p.m.

State of the State II
Olin Hall 130
Shivani Penberthy, moderator
Caitlin Rooney, coach

Loretta Velaochaga Klugger, Julia Bladin, Michael Augustine, Iska Nardie-Warner, Gladys Gitau, James Morris-Lent, Jacqueline Bonilla, Shivani Penberthy | Barriers to Full Legal and Political Participation for Minorities in Washington State 2 p.m.

Latinos and other racial or ethnic minorities in Washington state face multiple, intersecting barriers to exercising full "citizenship," considered in various ways. Our presentation focuses on research about key current efforts in Washington to enhance political and legal citizenship for communities of color. Three student teams from "State of the State for Washington Latinos" conducted the projects we will discuss. Immigrants and nonprofit organizations that provide immigrant services will face new challenges when comprehensive immigration reform passes. Minority youth have a low voting turnout, but geographical analysis maps opportunities to mobilize youth of color. Underrepresentation of minorities is common in courtrooms across the U.S., and statistical, geographical and focus-group analyses clarify the obstacles that prevent fair representation in the jury pool. Our research suggests that identifying the barriers inhibiting minority groups' full citizenship can strengthen initiatives for equal participation of minorities in the political process. Faculty Sponsor: Paul Apostolidis

Gender and Identity
Olin Hall 157
Nina Pascucci, moderator
Chris Cahoon, coach

Lauren Hauck | Tattoo Culture in Russian Prisons 2 p.m.

Tattoos have been a significant aspect of Russian prison culture for decades. They are a means of storytelling, not only of prisoners' crimes but also of their experiences in some of the world's most brutal prisons. These tattoos initiate the wearer into the underworld of the prison system, permanently recording on the body a symbolic representation of a crime, punishment or status. Over the course of 40 years, Danzig Baldaev, a warden at the Kresty Prison in St. Petersburg, created a series of encyclopedias documenting tattoos from Russian prisons as well as a separate work detailing tattoos of the gulags. My examination of Baldaev's work provides a glimpse into the fascinating and often deeply disturbing world of Russian prisons through the visual narrative of body art. Faculty Sponsor: Lynn Sharp

Alexandra Arneson | Anxiety and Hypermasculinity in a Prison Sample 2:15 p.m.

Hypermasculinity can be defined as "an exaggerated sense of male identity." Hypermasculinity is often magnified in prison environments. Qualitative research suggests that inmates tend to use hypermasculinity as a way to help them survive incarceration. This pressure to constantly be "on" with their hypermasculinity, however, may result in

heightened stress levels for the inmates. My presentation explores the relation between hypermasculinity and anxiety, for which I asked men in a medium-security prison to complete questionnaires. I hypothesize that inmates' rates of hypermasculinity and anxiety will be related to each other, and that levels of hypermasculinity are greater for inmates then for men on the outside. My research is important because it provides support for intervention programs in prison to focus on hypermasculinity, especially since the behaviors that are adopted through hypermasculinity may not be beneficial upon release. More quantitative research on inmates and male offenders is clearly needed. Faculty Sponsor: Erin Pahlke

Marin Axtell | Audiovisual Language and the Gender Binary in "XXY" by Lucía Puenzo 2:30 p.m.

My presentation explores the audiovisual language of the film "XXY" (2007) by Lucía Puenzo. I will identify and examine color, soundtrack and body language in the film as aspects of audiovisual language. Through the analysis of these key elements, I will show that the aggregation of meaning subtly guides the observer through a representation of intersexuality in which Alex's body and the problems she faces are personified by the natural world around her, confirming that she is a part of nature. All of these aspects of investigation find themselves in in-between spaces, chiefly with regard to gender, and all reject the gender binary in various ways. Through these elements and the rejection of assumptions of the male gaze with regard to the gender binary, "XXY" points to the possibilities of intermediate spaces. Faculty Sponsor: Janis Breckenridge

Nina Pascucci | The Paradox of African American Caricature 2:45 p.m.

Caricatured depictions of African Americans were prevalent and profitable in early 20th century American visual culture. Stereotyped images circulated in mass media, children's books and ceramic figurines, saturating nearly every level of society with grotesque, derogatory visual arguments that were a symptom and reinforcement of racial hierarchies. My presentation examines how these images have persisted and evolved within America's collective conscience, focusing on practices of collecting Jim Crow-era memorabilia and satirizing stereotypes. Incorporating black cultural criticism and specific artifacts, I argue that framing African American caricature as a current or historical "problem" undermines the possibility of successfully critiquing it. Rather, discussing contemporary black caricatures as a paradox – embodying both a tradition of racist rhetoric and a viable means of African America agency – provides a productive method through which to examine the role caricature plays in notions of blackness. Faculty Sponsor: Lisa Uddin

Terrestrial Terrain

Science 159

Chase Martin, moderator

Emily Aumann, coach

Kira Murray | Fine Scale Structure and Micromorphology of the Cricket Flat Paleosol, Elgin, Ore. 2 p.m.

When preserved in the rock record, paleosols, or "ancient soils," can indicate past environmental conditions. The Cricket Flat paleosol formed around 14 million years ago, a time that is not well studied in Oregon's climate record. This study focused on the fine-scale structure and micromorphology of this paleosol in order to identify features that are not visible at the field scale, but that can help better our understanding of the history of the soil. We identified root traces, clay coatings on voids and other features that allow us to interpret the original soil type. The occurrence of these features suggests that the climate of Oregon during the time of formation was much hotter and wetter than it is today. Faculty Sponsor: Nicholas Bader

Claire Martini | Coastal Uplift and Associated Mortality of Intertidal Organisms from a 7.6 Mw Earthquake, Nicoya Peninsula, Costa Rica 2:15 p.m.

The mortality of sessile intertidal organisms is thought to be a useful indicator of rapid coastal uplift. After the 5 September 2012 earthquake of 7.6 Mw (a relatively shallow quake off Punta Guiones, Costa Rica), a bleached white band appeared on rocks along the coast of the Nicoya Peninsula. Eyewitness accounts and photographs from two weeks

after the earthquake were correlated with measurements and surveys taken June-July 2013. A band of mortality appears along the coast onshore of the rupture area from the Nicoya seismogenic zone. To categorize earthquake-related mortality, we measured the vertical extent and mortality of three species: a clam (*Chama echinata*), the ribbed barnacle (*Tetraclita stalactifera*) and coralline algae. Faculty Sponsors: Robert Carson, Kevin Pogue

Katherine Elkind | Investigating Eruption Triggers of an Aleutian Island Volcano, Alaska 2:30 p.m.

In 2001, Mt. Cleveland, an active stratovolcano, experienced one of its largest eruptions on record. Anomalously, that eruption produced both magma rich in magnesium and iron as well as silica-rich magma, which were collected for chemical analysis. In this study, we used electron microscopy to obtain chemical analyses and images of minerals in basaltic andesite bombs and silicic pumice to investigate whether the mixing of chemically distinct magmas caused this large volcanic eruption. Thermodynamic models of plagioclase and feldspar mineral compositions document differences in the pre-eruption temperatures and pressure conditions of the two magmas, supporting the hypothesis of magma mixing as the eruption trigger. Faculty Sponsor: Kirsten Nicolaysen

Chase Martin | Reactive Transport Modeling of Pedogenic Carbonate Deposition in the Rhizosphere 2:45 p.m.

The precipitation of calcium carbonate in soils (pedogenic carbonate) is a common chemical process in arid and semi-arid soils, including many soils around the Walla Walla Valley. Understanding the chemical mechanisms of pedogenic carbonate deposition in the rhizosphere, the soil area influenced by plant-root processes, is essential to studies of soil development, paleoecology, and paleoclimatology. Reactive transport modeling allows us to identify important mechanisms for pedogenic carbonate formation through the manipulation of environmental parameters within the models. We use the Subsurface Transport Over Multiple Phases (STOMP-WAE w/ECKEChem) groundwater flow and chemistry reactive transport model to simulate the formation of calcium carbonate deposits adjacent to a plant root. Faculty Sponsor: Nicholas Bader

Climate Change and Conservation

Science 100

Erik Anderson, moderator

Margaret Eismeier, coach

Alice Willson | Identifying Key Factors Influencing Growth and Survival of Bluebunch Wheatgrass 2 p.m.

Bluebunch wheatgrass, a bunchgrass native to the interior Pacific Northwest, has experienced a significant decline over the past century. Historic overgrazing and invasion of exotic species such as cheatgrass may be responsible for this major decline. Little research has been done to understand the relative importance of variation in demographic variables including growth, survival and reproduction to population viability. I collected demographic data on bluebunch wheatgrass and analyzed the major factors influencing population growth through matrix models and demographic transition analyses. Through the analysis of these matrices, conservation can target precise stages in the plant's life to optimize survival and reduce cost while ensuring the survival of this native species that provides an important food source to many native animals. Faculty Sponsor: Timothy Parker

Molly Simonson | The Role of North- and South-facing Conditions and Competition From Cheatgrass on Bluebunch Wheatgrass Seedling Survival 2:15 p.m.

Bluebunch wheatgrass is a perennial bunchgrass native to and dominant in the inland Northwest. Its recent decline is thought to be in part due to failures in recruiting new plants. Bluebunch has lowest survival in early life-stage transitions, before it establishes deep roots to successfully avoid competition for moisture. Thus, competition for shallow soil moisture by cheatgrass may limit establishment. We experimentally manipulated exposure to solar radiation and thus evaporation of soil moisture in a set of 12 plots on south-facing slopes, where bluebunch is sparse. Shaded plots simulated moist north-facing conditions, and control plots were normal south-facing conditions. Our results show

significantly increased seedling survival in shade plots, indicating that soil moisture does determine establishment. Correlative analyses also suggest cheatgrass may compete for soil moisture. Established adult plants do well, but seedling establishment limits recruitment of new adults. Conservation efforts should focus on favoring recruitment of bluebunch seedlings. Faculty Sponsor: Timothy Parker

Nicholas Davies | The Future Role of Methane-Consuming Bacteria and Global Climate Change 2:30 p.m.

As a result of changing oceanic conditions, the release of subsurface methane gas has begun in locations that have not previously experienced release of this potent greenhouse gas. Current understanding indicates that bacteria consume the vast majority of methane that escapes from these subsurface marine reservoirs termed seeps. However, this understanding is derived from already formed seeps. The role of methane-consuming bacteria at these seeps during the early stages of methane release remains primarily unknown. To understand the early proliferation of methane-consuming bacteria, an artificial methane seep system was designed and implemented on the coast of Newport, Ore. Sediment samples were retrieved after methane introduction and microbial proliferation was determined using a characteristic fatty acid biomarker. Results suggest methanotrophic bacteria may be able to rapidly respond to methane release, minimizing the implications of novel methane seeps as a potential tipping point in global climate change. Faculty Sponsor: Sara Belchik

Meredith Kretzler | Social Control and Melancholy: Re-envisioning Climate Change and Our Changing Climate 2:45 p.m.

I investigate the social construction of climate change by focusing on how the issue is understood to be forever a future catastrophe. I flesh out many presuppositions present in the common understanding of climate change, such as a nature/culture dualism, risk-generated fear, linear temporalities and unquestioned scientific methods. Due to the immediacy of climate change, I also formulate a new relationship to the issue, one informed by a recognition of imminence, social influence and panic. Instead of assuming a relationship to our environment that is "post-natural," as the majority of climate change discourse suggests, I explore the possibility for positive social change that lies in failure, instability and the unknown. I posit an answer to the question: How do we humbly yet responsibly consider our influence on the climate while not constructing it as a falsified and predictable entity? Faculty Sponsor: Alissa Cordner

Erik Anderson | Samsø and the Wallowas: Rural Resource Management 3 p.m.

The Danish island of Samsø and Wallowa County, Oregon, are similar in their isolation, rural nature and economic depression. Moreover, both areas highlight projects that support rural renewal and opportunities afforded by green jobs. After major industries left both regions in the 1990s, small, locally-based NGOs established themselves to assist in the transition from a resource extraction economy to a more resilient and diverse local economy. Yet, Samsø Energiakademiet and Wallowa Resources have taken divergent approaches to community resource management, a result of differing backgrounds and visions. The two NGOs serve as microcosms of the successes and failures of community-based environmental planning in rural landscapes and the future of resilience practice in a globalized economy. Faculty Sponsor: Phil Brick

Physics Meets Philosophy

Science 151

Logan Emlet, moderator

Mitchell Smith, coach

David Ball, Geoffrey Cushman | Student Research and Collaboration with LIGO 2 p.m.

Einstein's general theory of relativity predicts that the motion of very large objects will create ripples in the fabric of spacetime. The goal of LIGO, which stands for Laser Interferometer Gravitational-Wave Observatory, a multi-$100 million dollar government project, is to verify these ripples, which are one of the last untested predictions of the general theory of relativity. As these waves pass by, they should cause a displacement on the order of 10^{-19} meters, around

10,000 times smaller than the radius of an atomic nucleus; this incredibly small displacement is exactly what LIGO is designed to detect. We will present on LIGO in general; how it works and what the implications of gravitational wave detection are, as well as the research we are doing on thermo-optic measurements of mirror coatings and why these measurements are significant to LIGO. Faculty Sponsor: Gregory Ogin

Nicholas Shariat | Sweat the Small Stuff: The Physical and Philosophical Implications of Quantum Mechanics 2:15 p.m.

In a prophetic lecture given in 1959, physicist Richard Feynman considered the possibility of manipulating individual atoms as a more powerful form of synthetic chemistry. Today, nanotechnology stands as a testament to this predication. From energy creating carbon nanotubes to targeted drug delivery systems, this area has the capacity to revolutionize the applied sciences. The conceptual framework behind nanotechnology, however, is quantum mechanics. After decades of hard work by some of the greatest minds of the 20th century, quantum proved to be the best explanation of atomic scale phenomena. But why was its development such undertaking? And why was contemporary physics insufficient? The answer involves an intense reframing of the interaction between physics and philosophy. We will consider both the history and philosophical implications of quantum mechanics and examine how thinkers like Einstein, Bohr, Schrodinger and Heisenberg radically changed the way we look at the world. Faculty Sponsor: Allison Calhoun

Maxwell Reikosky | Heideggerian Implications of a Persuasive Network 2:30 p.m.

The world has changed dramatically since Martin Heidegger wrote his 1927 magnum opus "Being and Time." Heidegger did not live to witness the technological leap that produced the innovation of an interconnected, worldwide network. In my presentation, I show that the universal applicability and accessibility provided by portable computers has led to the propensity for existential change in the being of the modern human. Technological access has allowed for a socially normalized dependence on what Heidegger calls "the public," leading humans reliant on technology to develop in accordance with the public interpretations to which they are exposed. This network is incredibly persuasive, offering privileged humans the opportunity to relinquish authentic opinion by regurgitating virtually presented interpretations. I aim to use Heidegger's notions of "the public" and the "they-self" to delve into a phenomenological exploration regarding the roots and implications of this modern condition. Faculty Sponsor: Julia Ireland

Logan Emlet | The Ethical Glider: Authenticity and Ethics in Heidegger's "Being and Time" 2:45 p.m.

Martin Heidegger is famous for his interrogation of fundamental ontology. The fact that his writings carry ethical connotations often passes without remark. My presentation will, via an analysis of several passages of Heidegger's 1927 magnum opus "Being and Time," attempt to elucidate how it is that Dasein is, for the most part, inauthentically ethical. I will first address Dasein's fallenness in the "they," and then focus on Heidegger's specific analyses of anxiety, death and anticipation. Finally, I aim to illuminate the possibility of an authentically ethical "Being." In layperson's terms, this means that Heidegger's preliminary response to the question "What is the meaning of Being?" has radical ethical implications that open the door to an authentic way of Being. Faculty Sponsor: Julia Ireland

Race and Visual Culture

Science 104

Nandini Rathi, moderator

Noah Stern, coach

Emma Snyder | Binge Watchers Anonymous: The Disruption of Contemporary Television 2 p.m.

Do you watch several episodes of a TV show in a row? Ever feel as though you "date" your shows? Then consider yourself a binge watcher! Bingeing, or watching a stream of episodes faster than the timeline set by the networks for their release, has altered the landscape of television, from production to distribution to viewing norms. I examine the historical roots of bingeing and conclude that the trend is not new. With regard to narrative strategies, bingeing favors serialized, melodramatic, complex television. The industry employs artfully tailored distribution tactics to help their content reach binge audiences. Finally, I theorize that industry figures have crafted an inclusive ideology of bingeing that disguises its socially exclusionary nature. My analysis of bingeing within these three domains questions the industrial and social consequences of this trend. Faculty Sponsor: Anne Petersen

Alyssa Goard | Empowered Pioneers or Slaves to the News Cycle: The Personal Lives of the People Who Report the News 2:15 p.m.

Journalists and other members of the media are often under the critical eye of the academic world and the general public. It is crucial to remember that within the unfolding discussions of journalism as a public service are the lives of the people working in the profession every day. Their careers and lives are altered by the modern demands for information. While studying in Washington, D.C., in the spring of 2013, I interviewed 12 different journalists working at the national level for major news outlets about their careers and personal lives. In analyzing my findings, clear trends appear. Journalists' relationships, health, technological dependencies, workplace expectations, families and stress levels are dramatically impacted by their careers in newsrooms, which are increasingly understaffed. By examining how the modern media cycle affects the lives of journalists, the human costs of changing technologies and informational expectations within American society become visible. Faculty Sponsor: Susanne Beechey

Xialing Ann Chen | Toshiro Mifune and Tony Leung Chiu Wai: Star-Image Construction of the Imperfect He-Man 2:30 p.m.

Postwar Japan (1945-1965) and postcolonial Hong Kong (1997-present) underwent profound cultural, economical and political changes. These periods of transition, full of anxiety and uncertainty, generated cultural climates that produced the two most successful, versatile Asian stars in cinematic history: Toshiro Mifune and Tony Leung. My presentation attempts to answer a central question: Are there ideological similarities and thematic expressions in how Mifune's and Leung's star images grapple with cultural imperialism, political uncertainty, social anxiety, national identity crisis and rapid globalization? What might be the significant implications of such connections? Despite a half-century and an ocean separating them, Mifune and Leung's star personas rework masculinity in similar ways. Ultimately, I argue that these stars reconcile traditional values with new ideals of what it means to be a he-man, a significant issue given the global politics and global states of postwar Japanese films and postcolonial Hong Kong films. Faculty Sponsor: Anne Petersen

Nandini Rathi | Challenging Fixity in Film: The Cinema of Transvergence 2:45 p.m.

My presentation explores the cinema of "transvergence," a new approach to film theorized by Will Higbee, to glean the effectiveness of the work of three women directors from the MiddleEast/North Africa: Raja Amari, Annemarie Jacir and Samira Makhmalbaf. Transvergence in film suggests possibilities for challenging the fixed positions typically presented by means of hegemonic structures of knowledge and power. A transvergent approach provides an open-ended framework for understanding the interconnections that bind these filmmakers to a given film culture/national identity; to the intentions, approaches and material conditions behind the production of their films; and to the international reception of their films. An understanding of these factors reveals the differences and imbalances of power that exist between various film cultures and film industries. Faculty Sponsor: Anne Petersen

Arts and Culture

Kimball Theatre

Erik Feldman, moderator

Nicky Khor, coach

Katherine Lee | Context and Celts: The Poetry of William Sharp and the Music of Arnold Bax in "A Celtic Song Cycle" 2 p.m.

The poet William Sharp (pseudonym Fiona Macleod) and the composer Arnold Bax shared a strong interest in Celtic culture and history. Both were part of the Celtic Revival, a movement that looked to the ancient Celts for inspiration in various art forms. My presentation examines the intersection of these two artists through "A Celtic Song Cycle," Bax's musical setting of five poems written by Sharp under the Macleod pseudonym. I offer an analysis of Sharp's poems in their original context, a collection of poems titled "From the Hills of Dream: Mountain Songs and Island Runes," and the meaning behind these texts. I then highlight the unique chordal and intervallic relationships Bax employs in the song cycle, and the manner in which these relationships alter the audience's understanding of Sharp's poems. Faculty Sponsors: Susan Pickett, Sharon Alker

Margaret Eismeier | "Sharknado [ʃɑɹkneɪdoʊ]": The Intersection of Linguistics and Internet Culture 2:15 p.m.

The Syfy channel original movie "Sharknado," which features a cyclone of sharks wreaking havoc on downtown Los Angeles, premiered on July 11, 2013. The film created huge buzz on social media, generating more than 387,000 tweets within 24 hours. At the same time, the University of Michigan hosted the Linguistic Society of America's Summer Institute, where the popularity of Twitter among attendees led to plenty of discussion about Sharknado. While the word "sharknado" may or may not be an obvious blend of "shark" and "tornado," "sharkado" or "tornashark" are even more unclear. In my presentation, Optimality Theory is used to examine the morphophology of the blend [ʃɑɹk] + [tɔɹneɪdoʊ], demonstrating why "sharknado" is the best option. The work of Gretchen McCullough on what makes an effective parody name for Benedict Cumberbatch is referenced, as is Cara DiGirolamo's work on blended names for couples in fan-fiction. Faculty Sponsor: Dana Burgess

Erik Feldman | From Oblivion Back Home: Creating an Edition of Marion Bauer's Symphony No. 1 2:30 p.m.

Marion Bauer (1882-1955) was born in Walla Walla but spent most of her life in New York, where she was well-known and widely respected as a composer and professor at New York University. From 1947 to 1950, she composed her one and only symphony, which was to be premiered under the baton of renowned conductor Howard Hanson. The premiere was canceled due to an inordinate number of errors by Bauer's copyists. Deeply dismayed, Bauer shelved the work, and it was never performed or published. In her research, Susan Pickett, Chism chair of music at Whitman, acquired a copy of Bauer's manuscript. From this we created a publication-ready edition of Bauer's never-performed piece. My presentation will cover the entire project, from Bauer's manuscript to a final copy, detailing the technical, musical and theoretical aspects of the editing and engraving process. Faculty Sponsor: Susan Pickett

Studies Abroad

Reid G02

Nathan Sany, moderator

Jessica Van Horne, coach

Nayomi Kanz, Kalen Bergado | Empathy Through Travel: How Study-Abroad Programs Foster Positive Evaluations of Outgroups 2 p.m.

In the 1950s, Gordon Allport argued that positive intergroup contact is the most effective method by which to reduce prejudice. While this theory is still generally accepted, research has produced conflicting results in the area of study-abroad programs, which are widely viewed as facilitators of positive intergroup contact. This discrepancy raises the question of how effective study-abroad programs and intergroup contact in general are in reducing prejudice. Through surveys and reaction-time tests, our study explores explicit and implicit prejudice towards outgroups that are stigmatized. We hypothesized that students who studied abroad would demonstrate decreased levels of prejudice relative to students who have not yet studied abroad. We also expected study-abroad programs to increase empathy levels; therefore, we also examined the power of empathy as a mediator in reducing prejudice against outgroups, and investigated whether the effect of decreased prejudice generalizes to outgroups whose stigmatization is considered socially acceptable (i.e., overweight). Faculty Sponsor: Nobuko Mizoguchi

Theodore Ciszewski | Rural Romanticism: The Migrant Aspirations and Experiences of Young Farm Workers in Ulad Ghanum 2:15 p.m.

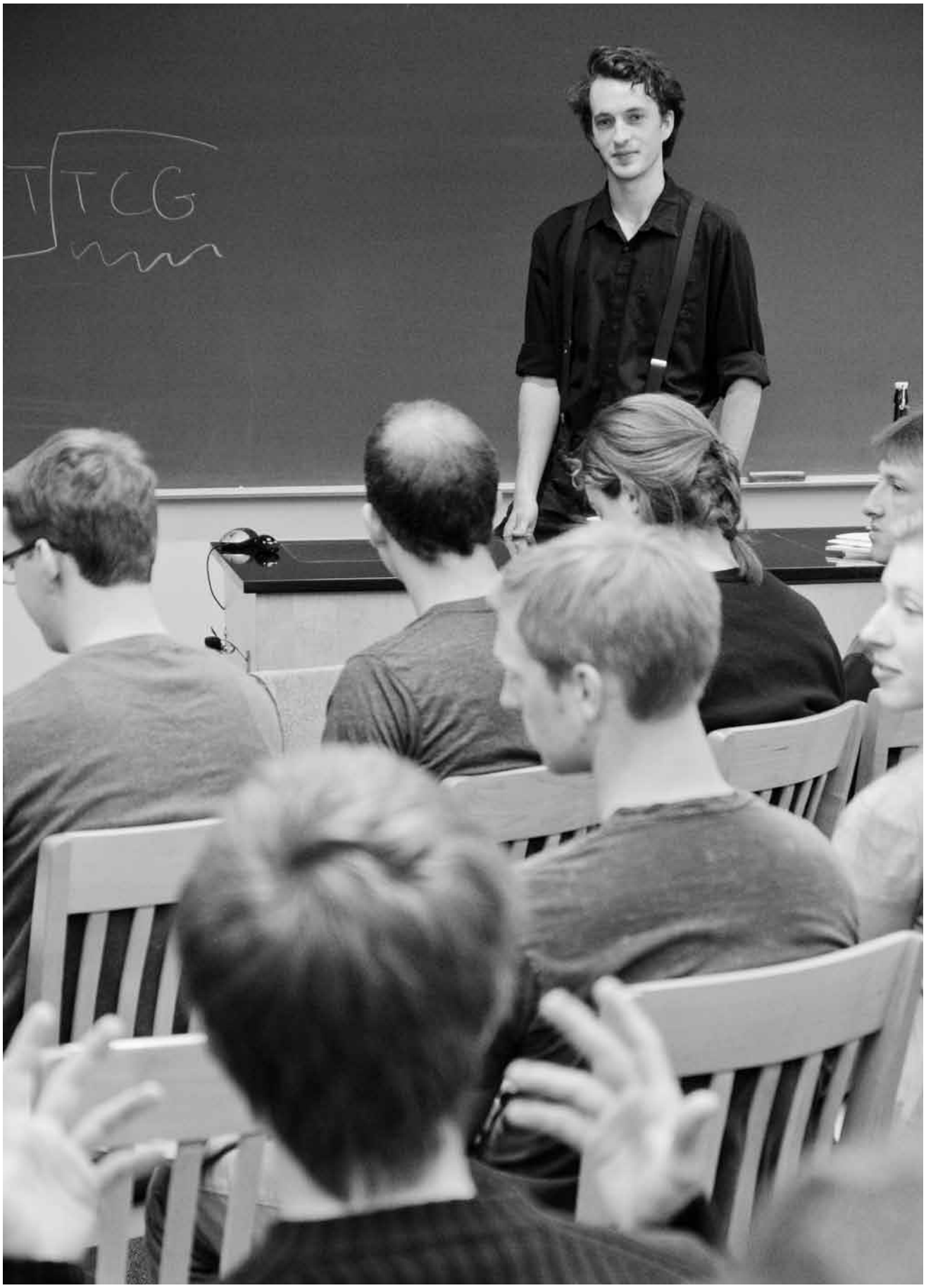
During the final month of my study-abroad program in Morocco I lived in the village of Ulad Ghanum. The purpose of my stay was to conduct research for the independent study portion of the program. As part of my research, I had conversations with young farm workers about their connection to village lifestyle and farming. Through these conversations, I hoped to understand more about the relationship of these young people to farming if and how it changed with their aspirations and experiences of migration. What I found from my specific case studies was that migration for many young farm workers in Ulad Ghanum leads to transnational identities that keep farming and life in Morocco a continuing part of their European experiences. In many instances, migration to Europe expands farming possibilities in the village and leads to annual trips home to account for social and economic ties to family land. Faculty Sponsor: Zahi Zalloua

Annie Watters | Society's Impact on Perceptions and Definitions of Happiness in the United States and Ghana 2:30 p.m.

The idea and definition of happiness is quite elusive, altered by time period, culture and the society in which one lives. In the United States people pursue happiness. Happiness is perpetuated as a commodity; if you buy this, look like this, do this, then you will be happy. In contrast, my research conducted in Ghana, found that happiness for Ghanaians is a short-term process of contentment. My presentation will compare the ways in which Ghanaians define and speak about happiness to the way people in the United States perceive, define and identify with happiness. I argue that happiness may be socially constructed and culturally influenced. My research illustrates how we may depend on society more than we think to help us navigate our understanding and definition of what it means to be happy. Faculty Sponsor: Michelle Janning

Nathan Sany | Couch Intimacy: "Authenticity" in the Context of Couchsurfing.org-Mediated Travel 2:45 p.m.

Trends in the field of tourism studies suggest that a new generation of travelers consider "destination" travel passé and seek more meaningful travel experiences. Known as "alternative tourists," this community is disenchanted with mass tourism's current state, which they believe further exacerbates inequalities embedded within the tourism industry by feeding the maw of capitalism. In the past decade, some alternative tourists have united on online social networks. They join online hospitality exchange networks such as Couchsurfing.org, a community of more than six million users eager to host other couchsurfers in their homes. My presentation examines the concept of authenticity in the context of couchsurfing-mediated travel experiences. I also dissect utopian ideologies of couchsurfing as a "global community." Based on interviews with couchsurfers in the Pacific Northwest, I formulate an answer to this question: Is couchsurfing an inherently more genuine, meaningful or morally conscious way to travel? Faculty Sponsor: Jason Pribilsky


TTCG

session 4
3:45 p.m.-5 p.m.

War and the Executive Office
Olin Hall 130
Benjamin Menzies, moderator
Margaret Eismeier, coach

Marlene Anderson, Lauren Hauck, Gordon Kochman, Emma Thompson, Jonathan Barsky, Benjamin Menzies | War and the Executive: Presidential Powers in the Era of the War on Terror 3:45 p.m.

The controversy over the authority of the president of the United States to conduct warfare is as old as the country itself. While the Constitution delegates to Congress the power to declare war, it also grants the president the power of commander-in-chief. The authority ascribed to these designations has changed constantly throughout American history. This presentation by members of the Whitman College Policy Debate team asks how, in an age of cyber warfare, drone strikes and rapid peace-keeping operations, the power of the executive is constrained, if at all. The presentation includes discussions of some of the consequences of the current arrangement of powers. Key issues include how the executive-led war against terrorism has affected relations with countries caught in the crossfire; how drone warfare collides with the basic humanity of both operators and targets; and how the increasing prevalence of executive-led military operations affects global security. Faculty Sponsor: Kevin Kuswa

Rhetoric and Public Culture
Olin Hall 157
Meredith Ruff, moderator
Duy Tran, coach

Ziyi Vicky Su | Rhetorical Agency in American and Chinese Culture 3:45 p.m.

Rhetorical agency is one of the key concepts in rhetoric studies. It reflects and reacts to various cultures differently. I argue that rhetorical agency as a means of communicative labor embodies the precious part of a culture. At the same time, it is always limited by the culture and its philosophy. I demonstrate my argument from three perspectives. The first introduces the fundamental concept of rhetorical agency and communicative labor from a broad perspective. The second illustrates that rhetorical agency reacts to different cultures and plays different functions. The third indicates the effect of different cultures as well as their combined effect on rhetorical agency and communication. Faculty Sponsor: Heather Hayes

Jesse Moneyhun | The Bolo Tie: Understanding Its Place in Cultural Narrative and Power 4 p.m.

The bolo tie is recognized nationally and internationally as a symbol of the American West. Yet, it has two distinct cultural interpretations. It is both a representation of cowboy culture and of Native American culture in the public consciousness. How can an object so culturally significant have two distinct interpretations? The answer lies in the original power conflict of the West. I take a cultural rhetoric studies approach to explain how civilization and media

stereotypes led to the creation of cowboy and Indian tropes, and how the sudden popularity of the bolo tie in the early 1950s called for these two Western cultures to create their own narratives for the origin of the bolo tie, each staking their claim to the object in the public consciousness. I emphasize how power conflict creates and is perpetuated by narrative conflict, and how these conflicts are intrinsic to the American West. Faculty Sponsor: Heather Hayes

Alyssa Donahue | Neo-Burlesque: In Search of Female Empowerment 4:15 p.m.

Undressing in front of a crowd makes neo-burlesque dancers feel powerful. They find thrill and utility in this power; it offers them self-confirming confidence and a platform for expression. Neo-burlesque dancers use creative and humorous striptease routines to challenge hegemonic views of the female body and to encourage female empowerment. However, I question whether an art form that centers on female striptease can actually empower women. I suggest that by concentrating on the sexualized body, neo-burlesque dancers direct attention away from other avenues of female power. They conflate sexual liberation with female empowerment and ultimately limit women's ability to achieve non-sexual power. Faculty Sponsor: Heather Hayes

Rachel Brock | Hegemonic Power: The Combination of Language and Visual Rhetoric on Magazine Covers 4:30 p.m.

Public culture is both reflected and influenced through mainstream media with a variety of rhetorical devices. My presentation focuses on popular magazine covers and the rhetorical combination of narratives and images. It is widely accepted that magazine covers portray primarily self-help advice and information regarding celebrities. However, underlying messages concerning body image and social status dominate the discourse. I posit that these discourses influence social reality and dominant ideologies, and I argue that magazine covers exert particular types of hegemonic power within public culture. I contend that the unique combination of narratives and images on magazine covers is

a powerful rhetorical device that has material consequences for individuals and in the larger public sphere. Faculty Sponsor: Heather Hayes

Meredith Ruff | Words About AIDS: Material Consequences of Equating Homosexuality With Disease 4:45 p.m.

During the epidemic of Acquired Immune Deficiency Syndrome (AIDS), scientific and civic communities produced rhetoric with lasting material effects. The Food and Drug Administration (FDA) continues to prohibit men who have sex with other men from donating blood. In so doing, the government effectively created a discourse in which queer blood is perceived as impure and unwanted. This discourse has led to mistreatment of gay men well beyond blood banks. Until 2009, for example, violence specifically targeted to harm homosexuals was not declared a hate crime. Such discourse has had far-reaching consequences for the GLBTQ movement in public culture. Faculty Sponsor: Heather Hayes

Environmental Sociology and Justice

Science 159

Ahren Stroming, moderator

Ian Becker, coach

Hannah Palkowitz | The Rubbish in Our Food Waste System 3:45 p.m.

The combination of population growth, landfill closures, and increasing waste generation per capita has made garbage disposal practices increasingly problematic. My presentation explores the barriers to innovation in the food waste system through an investigation of theoretical sociological concepts, including the conflict between capitalism and nature, metabolic rift, ecological modernization and organizational sociology. I examine leading technology available to improve current food waste practices but conclude that the rigidity of the current system makes any application of ecological modernization an inadequate solution. My conclusion leads to a larger observation, namely, that as societies attempt to transition towards more environmentally sustainable practices, it is impossible to rely entirely on capitalist, market-based solutions. Instead, we must include social and political actors to ensure meaningful progress. Faculty Sponsor: Alissa Cordner

Sara Kleinkopf | Overcoming Environmental Injustices of Open-Pit Mining in Argentina 4 p.m.

In Argentina, mobilization in the streets is the primary means by which citizens express their beliefs and effect change. Argentina's economic collapse in 2001 gave rise to the country's unique community assembly model as a means of influence on various local and national issues. In a month-long independent research project during my semester abroad in Argentina, I conducted interviews and observed assembly meetings to gain a better understanding of community assembly mobilization against open-pit mining in Bariloche and Esquel, Argentina. My research suggests that the goals, desires, actions and organization of these assemblies are a direct result of (and response to) the conditions of injustice that these communities face. Specifically, the organization of the assembly, the search for autonomy and the desire for structural change are the assemblies' means to overcome the environmental injustices associated with open-pit mining in Argentina. Faculty Sponsor: Alissa Cordner

Angeline Fugere | The Nature of the Problem: Connecting Environmental Activists' Conceptions of Nature to Solutions for Climate Change 4:15 p.m.

Humans and nature have always had a complicated relationship, especially today as global climate change threatens our society and our future. Scientists continue to research the physical impacts of climate change, and environmental activists promote different mitigation tactics. Few have investigated the social and cultural roots of various climate change "solutions." Do our relationships with the environment impact our attitudes and beliefs toward it, and how do they affect our understanding of climate change? Does this understanding make us more likely to promote and act on some solutions over others? I take a sociological approach to explore the relationships between Portland climate activists' conceptions of nature and the issue of climate change. I then examine how those conceptions lead these activists

to support their ideas for mitigating and adapting to climate change, whether through politics, economics or social beliefs. Faculty Sponsor: Alissa Cordner

Talia Rudee | The Next Generation of Bio-Citizens: A Case Study of Environmental Education in Walla Walla 4:30 p.m.

Environmental education is an essential resource for all citizens as technological advancements rapidly degrade our natural environment and impact human health. In the United States, environmental education is unequally distributed, implemented primarily in wealthier, white communities. As an unequally distributed resource, environmental education is a crucial factor in environmental justice. My presentation focuses on research I conducted about the ways and degrees that race, class and place impact how students at the fifth-grade level in Walla Walla receive and understand information and issues about the environment. My purpose is to highlight the importance of environmental education as an equally distributed social good. Faculty Sponsor: Alissa Cordner

Ahren Stroming | Bushmeat Poaching and Consumption in Northern Tanzania 4:45 p.m.

Bushmeat poaching -- and subsequent consumption -- presents the foremost threat to wildlife conservation in East Africa. To assess its social, ecological and economic magnitude, I interviewed a representative sample of the local population in the Lake Manyara area of northern Tanzania. Illegal poaching was evaluated based on 16 structured interviews of poachers from distinct hunting groups. Both availability and consumption of bushmeat were evaluated based on 185 structured interviews of ethnically diverse local households. Some 38 percent of households admitted to consuming bushmeat on a semi-regular basis. Conservative interpretations of numbers of wildlife species poached show rapid depletion due to illegal hunting. Swift implementation of capacity-building programs must occur to provide poachers with alternative income sources and ensure more caution in factors influencing consumption, education programs emphasizing the importance of conservation for groups with high consumption levels and strategic enforcement patrols in Community Areas frequented by poachers. Faculty Sponsor: Phil Brick

The Self: Skill Sets and Threats

Science 100 Brattain Auditorium

Michaela Lambert, moderator

Jake Lindsay, coach

Mathurada Jullamon, Jadelyn Martinez | Cross-Cultural Differences in Implicit Theories of Self Between Japanese and American Females 3:45 p.m.

Our presentation focuses on the cultural differences in implicit theories of self, more specifically the concepts of entity and incremental theories of self. Those with an incremental theory of self believe that one's abilities and traits are flexible and malleable, whereas those with an entity theory of self believe that self-concepts are largely fixed and innate. Whether individuals embrace entity or incremental theory for a given domain has significant implications for motivation and behavior. We investigated the perceptions of malleability in physical attractiveness and whether those perceptions influence motivation for change. We explored these implicit theories regarding one's physical attractiveness by comparing North American and East Asian females between 18 and 24 years of age. We predicted that East Asians will be incremental theorists and North Americans will be entity theorists, and that these theories will influence their motivation to change. Faculty Sponsor: Nobuko Mizoguchi

Hadley Scherer, Maura Barstead, Chris Konolige | The Effect of Tetris on Mathematics 4 p.m.

Mathematical proficiency is widely considered a critical component for successful functioning in the professional world and in everyday life. There is a well-established connection between spatial skills and mathematics. Therefore, one possible way to improve mathematic ability is to improve spatial skills. Although there is extensive research on the relationship between spatial skills and mathematics, only a handful of studies have examined if there is a causal connection between improving spatial skills and improving mathematics skills. Research indicates that playing certain

video games improves spatial skills. Our presentation explores whether playing the particular video game Tetris can improve mathematical skills. We chose Tetris not only because it has been found to improve spatial skills but also because its simplicity and accessibility make it an attractive spatial-skills training tool. We discuss whether playing Tetris before taking a math test will improve scores more so than playing Solitaire (a non-spatial game). Faculty Sponsor: Matthew Prull

Catelyn Webber, MacKenzie Hughes | Effect of Stereotype Threat on Source Memory in Older Adults 4:15 p.m.

Stereotype threat is the pressure individuals experience when they know that poor performance on a task will confirm negative, self-relevant stereotypes. Negative stereotypes about aging can impair memory in older adults, although it is unclear how negative stereotypes affect performance. We tested people under positive and negative stereotype threat. Older adults completed a source memory task after reading a positive or negative stereotype about their memory. Feedback was structured so that correct recall led to monetary gains and forgetting led to monetary losses. Regulatory fit theory predicts negative stereotypes will impair source memory performance under gains-based feedback, and will enhance performance under losses-based feedback. The positive stereotype condition is the comparison group for evaluating the effects of negative stereotypes. Developing a better grasp of how stereotype threat affects memory in older adults can lead to a deeper understanding of how social forces impact cognitive abilities late in life. Faculty Sponsor: Matthew Prull

Claudia Sanchez-Ayala, Yessica Palmer | Effects of Gender-Typical Versus Gender-Atypical Appearance on Trust and Persuasion in Advertising 4:30 p.m.

Individuals who appear or act counter to society's expectations of them often face negative repercussions. This backlash can occur when someone is gender atypical or contrary to one's gender roles. What are the implications of gender-atypical portrayals in the media? In our presentation we examine how people react to gender-atypical figures in advertising. Participants viewed an advertisement where the central figure was either gender-typical or gender-atypical and answered questions regarding trust in the advertisement figure, purchase intention and how similar to the advertisement figure they perceived themselves to be. We posit that gender-atypical figures lead to a negative view of the advertisement. However, when an individual perceives herself to be similar to the figure, she will view the advertisement favorably regardless of the gender typicality of the figure. Studying these effects can provide insight into our society in a post-gender era. Faculty Sponsor: Brooke Vick

Michaela Lambert | Implications of an Impaired Mirror Neuron System in Adolescents With ASD: A Study of Functional Gesture Quality During a Game of Charades 4:45 p.m.

While speech impairment in individuals with ASD (Autism Spectrum Disorders) has been widely investigated, few studies have analyzed how non-verbal forms of communication, such as gestures, can augment impaired speech. One system that has been heavily studied is the Mirror Neuron System (MNS). While the MNS could improve impaired verbal communication, the dysfunction of this system could prove detrimental to those with delayed language skills. Although reduced activity in MN areas has been identified in ASD individuals, the implications of this dysfunction remain unclear. In order to identify if MNS dysfunction impairs non-verbal forms of communication, we recorded 16 typically developing (TD) adolescents and 13 ASD adolescents as they played a game of charades. Using the footage, blind coders scored gesture quality to determine whether ASD individuals have a more widespread deficit in communication that impacts non-verbal communication. Faculty Sponsor: Leena Knight

Divestment in Academe

Science 151

Sierra Dickey, moderator

Michelle Flores, coach

Collin Smith, Audrey Vaughn, Claire Martini, Sierra Dickey | Intersectionality Within the New Divestment Movement 3:45 p.m.

Divestment campaigns have taken root on college campuses across the country in the past year, galvanizing students in collective support of political action on climate change. Divest Whitman's foremost demand of Whitman College is that the school take a political stance against fossil-fuel companies and re-invest specific portions of its endowment in environmental-social-governance funds. Other schools leading the student divestment movement (Swarthmore, Harvard) have voiced similar demands driven by different goals. Their campaigns call for divestment for the purpose of re-directing power to the environmental justice movement. They point to the grave injustices that the fossil-fuel industry inflicts on front-line communities and other marginalized populations. Our presentation will highlight these driving forces behind the divestment movement and locate intersections between issues of climate change and racial/social injustice. We are eager to demonstrate a new approach to divestment that might be unfamiliar to Whitman students. Faculty Sponsor: Robert Carson

Discrimination: Study and Practice

Maxey 104

Beverly Li, moderator

Simon Giloi, coach

Rosemary Hanson | Weeaboos and the People Who Hate Them 3:45 p.m.

Most people have never heard of the word "weeaboo." It is an obscure piece of Internet jargon yet to fully emerge from the darkness of 4chan, an image-based Internet bulletin board. Yet, most people are familiar with the subculture it identifies. Weeaboos are Westerners deemed "too into Japan," obsessed with a culture far different from their own and, through their obsession, alienated from their culture of origin. Perhaps the most fascinating aspect of this subculture is the visceral reaction against it by the Western mainstream. Hatred froths in Internet rants and percolates through casual conversations, yet the underlying conceptions about what make weeaboos undesirable are based in fiction. How and why hatred for this group exists reveals internalized ideas in the mainstream culture about appropriateness, adulthood and how cultural boundaries should be negotiated. Faculty Sponsor: Suzanne Morrissey

Kristen Whittington, Evan Kleiner | Sex Discrimination in the Workplace 4 p.m.

A mere four percent of Fortune 500 companies are led by female CEOs. Facebook's Sheryl Sandberg puts the responsibility on individual women to change the workplace environment by "leaning in" at work to claim high-powered positions and overturn gender inequality. Our research question asked if Sandberg's strategy would effectively address the problem. We present a mathematical model of the management structures of Fortune 500 companies. Our research shows that women integrate extremely slowly into discriminatory workplaces without formal structural changes such as affirmative action. In our presentation, we consider the implications of this research on the success of Sandberg's proposal. Faculty Sponsor: Jennifer Cohen

David Fleming, Rachel Cline, Isabel Zarate | The Effect of Individual Characteristics and Social Support on Academic Achievement 4:15 p.m.

Achievement gaps among students of racially, ethnically and socioeconomically diverse backgrounds are a persistent problem in education. Researchers have identified several internal and environmental factors that moderate the

negative correlation between risk factors and academic outcomes. Our presentation extends this work by exploring how mind-set, self-regulated learning and social support are related to academic achievement for at-risk students and whether they moderate the relation between risk and achievement. We surveyed freshmen and sophomore high school participants from diverse backgrounds and measured their levels of risk, growth mind-set, self-regulated learning, social support and grade-point average. Our results will be discussed in light of promoting protective factors that may minimize achievement gaps. Our study will strengthen resilience literature by considering how the improvement of individual factors of intelligence beliefs and learning approaches, as well as environmental factors of social support, might boost academic achievement and address educational disparities. Faculty Sponsor: Erin Pahlke

Sara Mecca, Katherine Benjamin | Effects of Ethnic Identity and National Identity on Perceived Discrimination Among Latino Adolescents 4:30 p.m.

Our presentation examines how perceptions of discrimination are related to the ethnic and national identity of Latino adolescents. Specifically, we explore how the identification of Latino youth with their "American" identity may interact with their ethnic identity to affect experiences with and responses to discrimination. Previous research on ethnic minorities has yielded conflicting findings. Though there is strong evidence that identification with one's ethnicity is a protective factor to the negative outcomes of discrimination, little is known about how national identification may moderate this relationship. Furthermore, less research has been conducted about experiences of discrimination for Latinos than for other ethnic groups. We collected data from middle and high school students. Our research will provide insight about the interaction between ethnic and national identities and what combination most protects against the harmful effects of discrimination. Faculty Sponsor: Erin Pahlke

Alan Pugh, Beverly Li | Differential Effects of Positive Emotions on Racial Ingroup Perception 4:45 p.m.

A study of positive emotions found that happy people tended to think less deeply and stereotype more. Later research demonstrated inclusive, flexible thinking among happy people. We posited that different positive emotional states (joy and contentment) account for this discrepancy and tested this idea in the context of race perception. We asked white and Asian participants to place computer-generated white, Asian, and white/Asian mixed faces on a continuum from "completely white" to "completely Asian" and rate the attractiveness of monoracial faces. We predicted that joy would promote a broader concept of participants' racial ingroup compared to contentment. We found that those who felt joyful rated mixed-raced faces as a part of their racial ingroup, and other-race faces as more attractive than those who felt content. This study expanded our knowledge of the effects of distinct positive emotional states on racial group perception. Faculty Sponsor: Brooke Vick

Great Performances

Kimball Theatre

William Ekstrom, moderator

Kyle Hendrix, coach

Clayton Collins | Fellowship of the Voice 3:45 p.m.

A cappella is a unique form of musical expression that utilizes only the harmonious qualities of the human voice, sometimes referred to as the sacred harp. A cappella arrangement differs from other forms of musical arrangement in that instrumental sounds must be translated effectively to the human voice. This poses some unique challenges, as in the orchestration of voices and the interpretation of original passages. In order to effectively arrange a piece, almost every aspect of the original music must be thoroughly taken into account. My presentation examines chord structure, melodic line and other aspects relevant to arranging a piece. I discuss these aspects as they apply to my arrangement of Michael Jackson's "Billie Jean" for a TTBB male chorus. My presentation will conclude with a performance of the piece by the Testostertones, Whitman's premier all-male a cappella group. Faculty Sponsor: John David Earnest

Aaron Stern | "The Weeping Totem Pole" 4 p.m.

My third composition under the tutelage of John David Earnest in the Music Department is an exploration of grief. I

used the five-stage Kübler Ross model to represent various moods associated with mourning a loss. While the Kübler-Ross model has been contested as an explanatory method, it provided a convenient format and a variety of moods to explore. I did not want to craft a monotonously morose piece, so I approached each mood somewhat obliquely. I tried to find something meaningful to say about the grieving process that would also be enjoyable to listen to. My program will consist of two movements: "Rage Cage" and "Inevitable," representing the stages of "anger" and "acceptance," respectively. "Rage Cage" is a perpetually kinetic and melodically fragmented section, evoking the blind anger that follows denial. "Inevitable" concludes the piece: a triumph over inner turmoil and reconciliation between griever, grief and what was lost. Faculty Sponsor: John David Earnest

William Hunt | Variations on "Resistance" by Muse 4:15 p.m.

During the fall semester I composed a set of five variations on the song "Resistance" by the band Muse. My piece is scored for clarinet, bassoon, violin, viola and cello. I present a brief description of the composition process, followed by a live performance of three of the variations. The variations are inspired by the cover version of the song "Resistance" recorded by the Croatian cello duo, 2CELLOS. Each of the first two variations expands on one simple melodic fragment from the theme and re-harmonizes those fragments. The third variation is a continuation of the second variation and expands the intervals of the main melodic fragment to create a more chaotic sound. Faculty Sponsor: John David Earnest

William Ekstrom | Theater Music and the Process of Composition 4:30 p.m.

Last year, I composed a series of pieces for Harper Joy Theater's production of "My Chernobyl" by Aaron Bushkowsky. In my presentation, I will explain the process of writing music for the theater and how to arrange theater music for a concert performance. I will use my own work as an example of thematic development and variation in the compositional process. My presentation will end with a performance of the first movement of my suite arranged from the original theater cues. I will be joined by Ryan Jacobsen on violin, Eric Lombardo on cello, Elz Hambleton

on flute, Rose Baunach on oboe, Aleks Maricq on clarinet and Lucas Barry on alto saxophone. Faculty Sponsor: John David Earnest

Ideology, Rhetoric and Resistance

Reid G02

Drew Powell, moderator

Jessica Van Horne, coach

James Lavery | An Analysis of the Rhetoric of Terror 3:45 p.m.

My presentation will examine the connections between the rhetoric used to describe Japanese Americans pre- and post-Pearl Harbor, and the rhetoric used to talk about Muslim Americans pre- and post-9/11. My research on the public vocabulary available to describe both groups reveals vast differences in identification that may have led to a difference in response to Muslim Americans after the attacks on the World Trade Center. Based on my analysis of mass media and government statements, I argue that public vocabulary limited the acceptance of Japanese Americans into American culture and served to create rhetorical connections between Japanese Americans and Japanese nationals. Conversely, my research on Muslim Americans illuminates the lengths to which public vocabulary allowed for acceptance of Muslim Americans and created distinct lines between Muslim terrorists and Muslim Americans. Faculty Sponsor: Heather Hayes

Allison Bolgiano | The Architecture of Contestation: Neoliberalism and Public Spaces in Seattle 4 p.m.

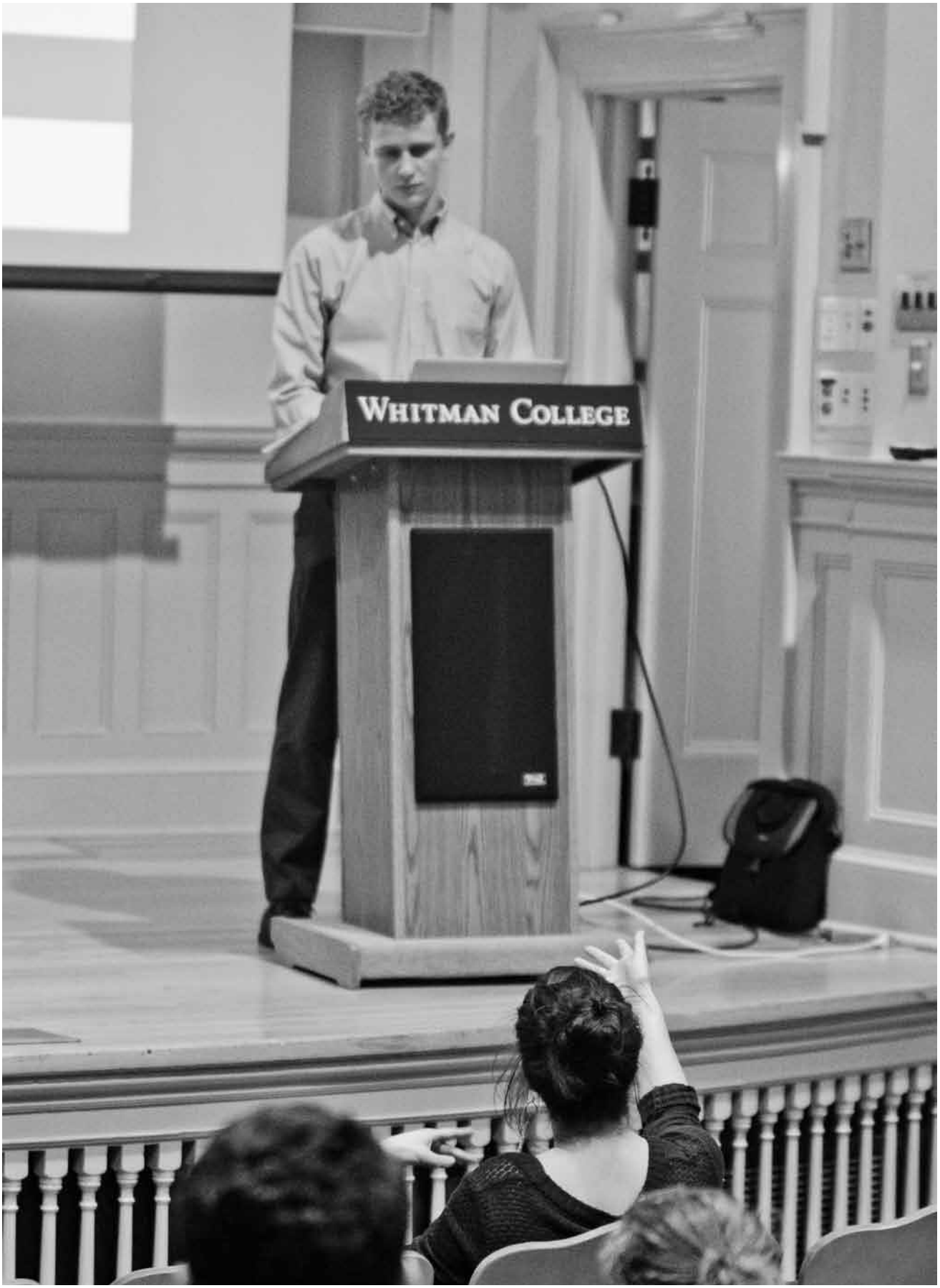
Today's dominant economic ideology, neoliberalism, holds that individual well-being is best advanced by the free market. In my presentation, I examine Seattle's Pike Place Market and Central Public Library as public spaces that radically contest neoliberalism's hegemonic emphasis on small government, individual liberties and competitive enterprise. I explore both alignments and divergences from neoliberal trends. In the case of the library, a place traditionally free of commercial activities, a coffee shop borders rooms named after corporate donors and a reference desk that resembles a Wall Street trading floor. Pike Place Market, a place inherently about commerce, began as an alternative to grocery trusts, resisted urban renewal and now provides myriad social services in an era of welfare rollback. In these spaces, I find contestations that offer possibilities for a richer definition of freedom, a more participatory civic life and more diverse communities in the heart of Seattle. Faculty Sponsor: Melisa Casumbal-Salazar

Keenan Hilton | Cultivating Resistance: The Subversive Political Potential of Gardening 4:15 p.m.

The era we live in presents us with a fairly confounding puzzle: a definitive quality of neoliberal capitalism is its imperviousness to resistance. As we witness extreme wealth gaps, massive urbanization and global climate change, we also observe resistance efforts being systematically confounded. Subversive efforts are rendered toothless as consumers grow increasingly passive (whether they buy a Toyota Prius, eat organic or participate in curbside recycling). The same power structures remain. I argue that gardening, broadly understood as the process of cultivation, is a more productive, subversive form if resistance. Buried in our cultural genome, gardening provides the antithesis to passive consumerism. It is an act of political, economic and spiritual cultivation. Faculty Sponsor: Phil Brick

Drew Powell | Analyzing Turkey as a Development Model for the Middle East 4:30 p.m.

Turkey is frequently cited as a developmental model for countries in the Middle East. It has a functioning democracy, robust economy and a history of relative political stability. However, when massive protests erupted across the country in June 2013, observers wondered if the Arab Spring had come to Istanbul. My presentation will answer some of the questions surrounding the protests in Turkey and their relation to the Arab Spring by examining the ruling Islamic AK party and the role it played. I will address claims that the AK party is "Islamizing" Turkey and discuss them within the larger context of factors that motivated protesters. Most of all, I will highlight the AK party's full-scale acceptance of neoliberal ideology and its effects on Turkey's various populations. Faculty Sponsor: Elyse Semerdjian


WHITMAN COLLEGE

index

Research Funding Sources/OCS Programs

Lydia Loopesko (p. 10)
Abshire Research Scholar Award

Kerry Streiff (p. 10)
KECK Geology Consortium

Alexandre Germanos (p. 10)
IES Abroad/Spain

Gabriela Kaus (p. 11)
NSF/REU

Janni Conrad (p. 11)
Perry Summer Research Award

Daniel Ellis (p. 12)
Perry Summer Research Award

Leah Mohtes-Chan (p. 12)
Whitman Internship Grant

Morgan Dienst (p. 13)
Perry Summer Research Award

Craig Barstow (p. 13)
Perry Summer Research Award

Walker Larson (p. 13)
Perry Summer Research Award

Cooper Schumacher (p. 14)
Abshire Research Scholar Award

Clint Vorauer (p. 14)
Whitman/University of Washington

Hannah Wilson (p. 15)
Abshire Research Scholar Award

Ryan Calvert (p. 16)
Walla Walla County Health Department

Margaret Robinson (p. 17)
CIEE/Costa Rica

Zach Strater (p. 17)
Perry Summer Research Award

Forrest Watkins (p. 17)
NSF/REU

Sarah Debs (p. 17)
NSF/REU

Lauren Elgee (p. 20)
Perry Summer Research Award; Soden Faculty-Student Research Award

Annique Rice (p. 20)
Perry Summer Research Award; Soden Faculty-Student Research Award

Anne Gaskins (p. 20)
Perry Summer Research Award; Soden Faculty-Student Research Award

Meghan Browne (p. 20)
Perry Summer Research Award; Soden Faculty-Student Research Award

Tao Large (p. 21)
Robert Norton Science Research Award

Satchel Grant (p. 21)
Whitman Internship Grant

Halley McCormick (p. 24)
NSF/REUO

Tia Herdman (p. 25)
Abshire Research Scholar Award

Mykhanh Pham (p. 25)
Sherwood Internship

Caitlin Morley (p. 25)
SIT/Chile

Tatiana Kaehler (p. 26)
SIT/Madagascar

Max Reikovsky (p. 28)
SIT/Nepal

Keiler Beers (p. 29)
Whitman/Blue Mountain Community Foundation

Stephen Uramoto (p. 30)
Associated Kyoto Program, Japan

Laurel Low (p. 31)
NSF/REU

Marika Lou (p. 34)
SFS/Costa Rica

Ysabel Diaz (p. 34)
Grand Canyon Trust

Carol Pengshung (p. 34)
Whitman/Infectious Disease Research Institute

Daniel Zajic (p. 35)
Whitman College and Natural Environment Research Council

Katherine Runkel (p. 35)
Whitman/Infectious Disease Research Institute

McKenzie Momany (p. 35)
Whitman/HHMI

Lucas Ramadan (p. 36)
Perry Summer Research Award

Meghan White (p. 36)
Watts Student Research Award

Janaki Phillips (p. 37)
Office of the Provost and Dean of the Faculty

Molly Hayes (p. 38)
Perry Summer Research Award

Shivani Pernberthy (p. 40)
Whitman/Blue Mountain Community Foundation

Claire Martini (p. 42)
Keck Geology Consortium

Molly Simonson (p. 43)
Perry Summer Research Award

Alice Willson (p. 43)
Perry Summer Research Award

Nicholas Davies (p. 44)
NSF

Erik Anderson (p. 44)
DIS/Denmark

Erik Feldman (p. 47)
Perry Summer Research Award

Annie Watters (p. 48)
SIT/Ghana

Nathan Sany (p. 48)
Adam Dublin Award

Theodore Ciszewski (p. 48)
SIT/Morocco

Sara Kleinkopf (p. 52)
SIT/Argentina

Michaela Lambert (p. 54)
University of California, Davis

Conference Organizing Committee

David Brauhn
Communications

Jon Loney
Technology Services

Jennifer Mouat
Language Learning Center

Dorothy Labe
Campus Events and Conferences

Keith Raether
Fellowships and Grants

Deberah Simon
Chemistry

David Sprunger
Multimedia Development and Services

Special thanks to Donna Jones, Natasha Blake, Phillip Schmatt, Debi Evans, Amy Dodds, Gary Hemenway, Bon Appétit, Whitman College Technology Services and the student coaches and student musicians who contributed their time and talents.

WHITMAN COLLEGE

Photography by Greg Lehman
Cover design by Travis Congleton