CUSRD

Chapman University Student Research Day

Fall Session Abstract Volume

OURCA
AT CHAPMAN UNIVERSITY

Office of Undergraduate
Research & Creative Activity

IL•17

Message from the Co-Directors

Greetings and welcome to the 2017 Fall Chapman University Student Research Day. This celebration highlights the breadth and depth of scholarly research and creative activity conducted by Chapman undergraduate and graduate students. It is a truly exciting day to learn about, explore, and appreciate the efforts that students and faculty have put into a wide variety of research and creative projects across the campus. It is my hope that all members of the university community can engage in and benefit from the Chapman University Student Research Day.

To students--take a look at the impressive range of projects in which your classmates have been involved over the past year, and become inspired to continue or participate for the first time in research yourselves during your time here at Chapman University.

To faculty--recognize the hard work of the students you have mentored, taught, and supervised, and celebrate the culmination of their efforts in a professional presentation setting.

To all--enjoy learning about this unique aspect of a Chapman education that allows students to engage in scholarly activity at the highest level: expanding knowledge and pushing at the boundaries of one's academic discipline.

Thanks for coming, and enjoy the day!

Dr. Anna Leahy is Director of the Office of Undergraduate Research and Creative Activity and Director of the MFA program in creative writing at Chapman University.

Dr. Julye Bidmead is Director of the Office of Undergraduate Research and Creative Activity and Director of Fellowships and Scholar Programs at Chapman University.

Keynote Speaker – Carolyn Forché

The Office of Undergraduate Research and Creative Activity welcomes Presidential Fellow and preeminent poet of witness Carolyn Forché. In addition to serving as the Keynote Speaker at this year's Chapman University Student Research Day, Forcé will give a public lecture this evening in the Center for American War Letters.

In 1998, Forché was awarded the Edita and Ira Morris Hiroshima Foundation for Peace and Culture Award in recognition of her work on behalf of human rights and the preservation of memory and culture. In 2013, Forché won the Academy of American Poets Fellowship for distinguished poetic achievement. Her accomplishments in poetry, translation, and human rights are unparalleled. She is truly a global citizen.

Forché is the author of four books of poetry. Her first poetry collection, *Gathering The Tribes,* won the Yale Series of Younger Poets Award. In 1977, she traveled to Spain to translate the work of Salvadoran-exiled poet Claribel Alegría, and upon her return, received a John Simon Guggenheim Foundation Fellowship, which enabled her to travel to El Salvador, where she worked as a human rights advocate. Her second book, *The Country Between Us,* received the Poetry Society of America's Alice Fay di Castagnola Award, and was also the Lamont Selection of the Academy of American Poets. Her third book of poetry, *The Angel of History,* was chosen for The Los Angeles Times Book Award. *Blue Hour* is her fourth collection of poems. Forché has just finished her next poetry collection and also her memoir of her years in El Salvador, Lebanon, South Africa, and France.

Forché's anthology, *Against Forgetting: Twentieth Century Poetry of Witness,* was published in 1993 and helped define poetry of witness. She following with the anthology *The Poetry of Witness: The Tradition in English, 1500-2001,* in 2014.

Her translation of Claribel Alegria's work, *Flowers From The Volcano,* appeared in 1983. That same year, In 1983, Writers and Readers Cooperative published *El Salvador: Work of Thirty Photographers,* for which she wrote the text. In 1991, her translation of *The Selected Poetry of Robert Desnos* (with William Kulik) was published. In 2000, Curbstone Press published Forché's translations of Alegría, entitled *Sorrow,* followed by *Selected Poetry of Mahmoud Darwish,* which she co-translated in 2002 and from which a chapbook selection had been published by The Lannan Foundation.

Forché's articles and reviews have appeared in *The New York Times, The Washington Post, The Nation, Esquire, Mother Jones,* and others. She has held three fellowships from The National Endowment for the Arts and a Lannan Foundation Literary Fellowship. In 2014, Forché was a finalist for the prestigious 24th Neustadt International Prize for Literature.

Acknowledgements

The Office of Undergraduate Research and Creative Activity gratefully acknowledge the following individuals and program for their support:

- Dr. Glenn Pfeiffer, Provost

- Crean College of Behavioral Sciences

- Schmid College of Science and Technology

- Wilkinson College of Arts, Humanities, and Social Sciences

Schedule of Events

12:00 – 1:30 pm	**Lunch Keynote Speaker**	**Bush Conference Center**
	Carolyn Forché	*Beckman Hall, 404*
	RSVP required	
2:00 – 4:00 pm	**Student Poster Session**	**Sandhu Conference Center**

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Graduate Students

Communication Studies

1. **Prescription Stimulant Misuse on College Campuses: Memorable Messages and Motives for Misuse Among Members of Greek Organizations**
   Presenter(s): Danielle Grainger and Amanda Olsen
   Advisor(s): Dr. Sara Labelle

   The purpose of this study is to understand attitudes regarding prescription stimulant misuse among college students by examining memorable messages and normative perceptions that are developed and passed on within the organizational cultures of sororities and fraternities. Additionally, this study examines the way memorable messages regarding misuse differ between members of sororities and fraternities, as well as how they vary between members of Greek organizations and non-members. Memorable messages are significant messages that impact people's lives and create lasting impressions. They may be words of advice told to us by a friend or family member, messages communicated by a person we admire or who holds a position of authority, or even actions we observe that change the way we think about things. Normative perceptions refer to perceptions about the behaviors others engage in. Prior research indicates that over-estimated presumptions regarding the prevalence of prescription stimulant misuse may contribute to the likelihood of a student engaging in similar behavior (Cutler, 2014).

   That said, we pose the following research questions:

   RQ1: How do memorable messages influence college students' attitudes toward misusing prescription stimulants?
   RQ2: How do memorable messages influence college students' perceived norms toward misusing prescription stimulants?
   RQ3: How do memorable messages differ between college students who are members of Greek organizations and non-members?

2. **Communication as a Gateway: Patterns of Disclosure about Prescription Stimulant Misuse on College Campuses**
   Presenter(s): Tessa Urbanovich and Juliette Atchekzai
   Advisor(s): Dr. Sara Labelle

   When misused and/or abused, prescription stimulants have detrimental consequences on those who engage, including negative health effects and legal ramifications (National Institute of Drug Abuse, 2014; National Council on Patient Information and Education, 2016). In college-aged populations, research has shown that the idea of stimulant misuse is spread among peers as a common and ordinary aspect of university culture, and that students do not need to seek out information about the drug (DeSantis, Webb, & Noar, 2008). In order to effectively create future campaigns to prevent

stimulant misuse, it is necessary to first examine patterns of college students' disclosure of stimulant misuse, especially as it generates further misuse in the campus environment (Benson, Flory, Humphries, Lee, 2015; Cutler, 2014; DeSantis, Webb, & Noar, 2008). Thus, utilizing survey questionnaires guided by the Disclosure Decision-Making Model, this study seeks to examine the relationships between the following variables: disclosure of misuse; relationships between misusers and targets of disclosure about misuse; and the misuser's motive for misuse. Expected findings will reveal that those who misuse prescribed stimulants are more likely to disclose their misuse (a) if their motivation for misusing is academic (b) if they perceive misuse to be relevant to the disclosure target, (c) if perceived stigma of misuse is low, (d) if their perceived level of closeness with disclosure target is high, and (e) if the disclosure target also misuses stimulants. Understanding communication and disclosure patterns among peers in a college setting where prescription stimulant misuse is widespread may help researchers and interventionists strategize prevention tactics. These strategies will help to hinder commonplace attitudes toward prescription stimulant misuses, and will also target social disclosure events which may potentially trigger targets to adapt this unhealthy and dangerous practice.

English

3. **Student Views on Collaborative vs. Individual Student Writing**
   Presenter(s): Stephen Gallas and Bryan Wisch
   Advisor(s): Dr. Ian Barnard

Collaborative writing is increasingly a focal point in modern writing pedagogy. When analyzing the benefits that collaborative writing has on students, however, there does not seem to be enough research conducted with regards to whether or not students actually prefer collaborative writing over individual writing. While the opinion of scholars on the matter is known, it would be useful to know where students stand on the issue, and whether or not writing preferences of individual writing students affect the process, as well as product, of writing.

By conducting an IRB-approved survey on a class first-year composition students, the researchers have conducted a small-scale experiment uncovering these issues of preference and productivity. Of course, the findings are self-reported, thereby adding a degree of unreliability concerning the efficacy of collaborative writing vs. individual writing, but that is not the aim of the study. The primary focus is not only on student preferences, but also the perceived efficacy of collaborative writing.

This study had been carried out to assist writing instructors with their decisions regarding what type of writing exercises and projects they assign to their students. For those who believe that there is a correlative relationship between enjoyment and quality of writing, this study would be of interest. Effective collaboration between students — and people in general — requires a complex understanding of the moods and preferences of those in the group. By revealing the thoughts that students have regarding the writing process, the researchers have helped educators come to a better understanding of collaboration and its uses.

Health & Strategic Communication

4. Evaluating a Mobile Application for Chronic Illness Online Support Groups
   Presenter(s): Elisa Kanter
   Advisor(s): Dr. Jennifer Bevan

Background: Roughly half of all adults in the U.S. live with at least one chronic condition. Online support groups are becoming a preferred source for seeking information and support for chronic illness, and the psychological and physiological health benefits of participating in these groups have been well demonstrated. However, there can also be significant risks to participating in these groups (e.g., the distribution of incorrect medical advice). Aims: The purpose of this study is to pretest an intervention consisting of a mobile application ("Supportal") and related promotional materials. This theoretically driven intervention aims at providing people with chronic illness easy access to social support through various online support groups, as well as strategies for assessing information quality and navigating these groups. Methods: Participants (N=111) living with chronic illness completed an online survey containing screenshots of Supportal and images of related promotional materials. Quantitative and qualitative evaluations of the effectiveness of Supportal and its messages were collected. Expected Results: It is expected that after exposure to intervention materials participants will feel more confident in their abilities to evaluate information quality and communicate in online support groups. They should feel comfortable navigating online support groups, positively towards online support groups, and more likely to visit online support groups for their illnesses. Feedback on how to improve intervention materials will also be coded. Conclusions: The use of online support groups among those with chronic illness will likely continue to increase as the prevalence of chronic illness and comfort with using computer-mediated technology rapidly rise. It is critical that this behavior is recognized so that interventions such as "Supportal" can be utilized in order to maximize the benefits for participating in online support groups and minimize any potential risks.

5. Perceptions of Prescription Stimulant Misuse Among Undergraduates
   Presenter(s): Bethanie Le and Jamie McCain
   Advisor(s): Dr. Sara LaBelle

Prescription stimulant misuse is prevalent among college students across the nation (Benson et al., 2015), particularly among upperclassmen. Further, DeSantis, Webb, and Noar (2008) highlighted that academic motivation is the primary motive for misuse of such drugs, such as Adderall. Our study seeks to examine potential factors that contribute to why upperclassmen misuse prescription stimulants more than their younger peers. Specifically, we examine the influence of academic self-efficacy, perceived stress, and peer communication surrounding misuse on perceptions that misuse as acceptable. Total number of participants (N= 141) were recruited through network and convenience sampling by graduate student researchers. The findings from this study support the prominence of college students' prescription stimulant misuse and provide greater insight on the necessary steps to alleviate this issue through effective, strategic health campaigns and interventions.

6. College Students' Perceptions of Mental Illness and Prescription Medications
Presenter(s): Rina Sano and Jeanelle Botha
Advisor(s): Dr. Sara LaBelle

The youth population diagnosed with Attention Deficit Hyperactivity Disorder (ADHD) has increased from 5.7 percent in 2008 to 11.1 percent in 2012 (Preventing Prescription Abuse in the Workplace Technical Assistance Center). Moreover, in the years between 2006 and 2011, there was a 67.1% raise in the dangerous nonmedical misuse of stimulants associated with ADHD treatments (Chen et al., 2016). With this increase in both the population of AD(H)D and the misuse of prescription medication, there is a high demand for further research into the causation and implications of these two trends. If we can identify the perception difference towards AD(H)D and other mental disorders, it will allow us to more accurately predict the likelihood of college students misusing AD(H)D prescription medication. Therefore, this study aimed to seek two questions: (1) Do college students' perceptions of the severity neurological disorders such as Anxiety and Depression influence their attitude towards AD(H)D? (2) Do college students' perceptions of neurological disorders such as AD(H)D, Anxiety and Depression affect their view on the misuse of respective prescription medications for these disorders? In attempt to provide an answer to these questions, we conducted an intercept survey at a private university in Southern California.

Health Sciences and Kinesiology

7. The Chapman Bone Algorithm: A Diagnostic Alternative for the Evaluation of Osteoporosis
Presenter(s): Levesque Elise, Anton Ketterer, and Wajiha Memon
Advisor(s): Dr. Frank Frisch and Dr. Cyril Rakovski

Osteoporosis is the most common metabolic bone disease and goes largely undiagnosed throughout the world, due to the inaccessibility of DXA machines. Multivariate analyses of serum bone turnover markers were evaluated in 226 Orange County, California residents with the intent to determine if serum osteocalcin and serum pyridinoline cross-links could be used to detect the onset of osteoporosis as effectively as a DXA scan. Descriptive analyses of the demographic and lab characteristics of the participants were performed through frequency, means and standard deviation estimations. We implemented logistic regression modeling to find the best classification algorithm for osteoporosis. All calculations and model building steps were carried out using R statistical language. Through these analyses, a mathematical algorithm with diagnostic potential was created. This algorithm showed a sensitivity of 1.0 and a specificity of 0.83, with an area under the Receiver Operating Characteristic curve of 0.93, thus demonstrating a high predictability for osteoporosis. Our intention is for this algorithm to be used to evaluate osteoporosis in locations where access to DXA scanning is scarce.

History

8. **A la Francaise: French Influences in Cold War Era White House Entertaining**
   Presenter(s): Erika Gibson
   Advisor(s): Dr. Stephanie Takaragawa

French style entertaining as a diplomatic tool was pioneered in the United States by Thomas Jefferson during his presidency, however, the art was revived 160 years later in the politically unstable Cold War era after a period of heightened nationalism. French influences were especially important during this time as they were an expected part of proper entertaining in Europe and gave legitimacy to the Presidency and, by extension, the government. While extensive research has been completed regarding the reintroduction of French influences to the White House under Jackie Kennedy, few scholars have discussed the practice as part of a larger trend in Presidential entertaining. This project argues that dining and entertaining is a vital part of foreign diplomacy during times of political instability. Examining the functions from both the Kennedy and Johnson administrations shows state dinners served more French dishes than events held for American guests. This implies that French food and wine were used strategically as a way to cultivate friendly relations with other countries. Rather than detracting from an American identity, the inclusion of French cuisine became a hallmark of the American "melting pot" by incorporating French techniques with traditionally American foods. The White House has thus become an important arena to showcase America's cultural and political power.

Physics

9. **Tracking Calibration Drifts in Continuous Quantum Measurement**
   Presenter(s): Shiva Lotfallahzadeh
   Advisor(s): Dr. Justin Dressel

We investigate how to correct the calibration drifts of a qubit undergoing continuous measurement. Currently, qubit measurement calibrations only remain valid for short measurement durations before naturally drifting due to uncontrolled environmental factors. In order to continuously measure a qubit for a longer duration and correctly interpret its evolution, it is necessary to dynamically update the calibrations while the measurements occur.
We explore the use of machine learning models such as recurrent neural networks for predicting the behavior of such calibration drifts over a longer duration. This effort is a step towards autocalibration for the continuous measurement process.

Writing and Production

10. The Influence of the Writing Center on Freshman Students' Performance
Presenter(s): Lama Alsulaiman
Advisor(s): Dr. Ian Barnard

Tutoring in a writing center for 7 months, I have worked with freshman students on many of their essays, but I was never really put in a position to examine to what extents and how the time these students spend in writing centers helps them in dealing with the areas of weakness in their writing in general. In my research presentation, I answer the question: How and to what extents the strategies that writing centers' instructors use in tutoring students might help in improving their writing in general? Different ideas were emphasized in the field of writing center's studies, Gary Tate, Amy Rupiper Tggart, Kurt Schick and H. Brooke Hessler, in their book "A Guide to Composition Pedagogies", maintain that, "Assessing writing center effects on students is quite complex (as is true for most educational practices) but also potentially quite powerful to better understand what students gain from their educational experiences" (310). Neal Lerner, in his essay "Writing Center Assessment", states, "It is enormously satisfying for the tutor to see clear evidence of progress where before it was only vaguely sensed" (60). Accordingly, the need for cases where development can be measured and assessed on more than a superficial level (grading students' work differently each time) is the base of my research where I provide more descriptive analysis of processes of students' development. The main method used in this research is observing a number of sessions in the Writing Center among four freshman students who visit the writing center for the first time. These observations, of the editing of their first drafts, are meant to establish the base for the comparisons with their later work. By tracing the progress they make in later writing assignments they submit to me after they visit the Writing Center, I conclude that students apply (to different extents) the knowledge that writing tutors provide them with, I also determine which modifications made on the aspects of their writing, in general, are more likely to be transferred to the later writing assignments they produce.

Undergraduate Students

Art

11. <u>The Influence of Storytelling on the Greater Society</u>
    Presenter(s): Abby McLachlan
    Advisor(s): Dr. Jocelyn Buckner

For the longest time I have wondered how I could combine my two scholarly interests throughout college, public relations/advertising and theater. It wasn't until my studies abroad in central Europe that the connection between majors became strikingly clear. Living in Prague and visiting some of the countries affected by WWII really educated me on the influence that theater and public relations/advertising had on society. Upon visiting specific sites such as Schindlers factory, Auschwitz, Birkenau, and Terezin I saw that theater was still alive and well during a time where so many other aspects of life were dying. I also learned so much about how propaganda, political public relations/advertising, were used to help as well as defeat the Nazi regime. I came to realize the positive and negative aspects that theater and public relations/advertising can inhibit in a culture, which drew an intriguing parallel, a parallel that I have decided to dig deeper into. I will study how these different forms of storytelling can relate, differ, and be an impact for change or repression.
The main study of this analysis is WWII, I start by reviewing theatrical performance produce by Jewish prisoners and Nazis, looking at similarities, differences, and how theatrical performance differed for both groups. Then I review pro and con Nazi propaganda posters, commercials, concentration camps, and newspapers. I conclude with a brief analysis of the 2016 elections to see if there are any direct comparisons between the time periods and what has and has not changed throughout the years.

Biochemistry and Molecular Biology

12. <u>DNA Methylation and Obesity in Survivors of Pediatric Acute Lymphoblastic Leukemia (ALL): A Report From the Childhood Cancer Survivorship Study (CCSS)</u>
    Presenter(s): Vidal Arroyo
    Advisor(s): Philip J. Lupo, Austin L. Brown, Kala Y. Kamdar, John W. Belmont, Gregory T. Armstrong, Wendy M Leisenring, Kevin C. Oeffinger

Purpose: Epigenetic mechanisms are important regulators of body mass index (BMI) in the general population but have not been explored among survivors of pediatric cancer. Because ALL treatment places individuals at high risk for adverse metabolic outcomes, we evaluated the association between DNA methylation and obesity among adult survivors of childhood ALL.

Methods: We selected 96 survivors of ALL based on the CCSS 2007 Follow-Up using "extreme phenotype" sampling. The Illumina HumanMethylation450 BeadChip was used to determine DNA methylation in buccal cells collected at baseline. Using linear regression, we compared DNA

methylation beta values between obese and normal-weight survivors at 211 BMI-associated loci identified in epigenome-wide association studies (EWAS) of BMI in the general population. False discovery rate (FDR) was used to correct for multiple testing.

Results: Overall, the mean ages at diagnosis, baseline, and follow-up were 6, 21, and 34 years, respectively. Among the 211 previously identified BMI-DNA methylation loci, 184 passed quality control measures. Of the 184 loci, 39 loci were associated with obesity in the CRT non-exposed participants (FDR < 0.05). Among the CRT exposed participants, no loci were significantly associated with obesity. Overall, there was statistical evidence that the association between obesity and methylation at 9 loci differed by CRT status (Pinteraction < 0.05). Slope directionality was largely consistent with previous studies at replicated loci.

Conclusions: Obesity methylation loci identified in the general population seem to play a larger role in CRT non-exposed participants when compared to their CRT-exposed counterparts. Methylation patterns associated with obesity in the general population are similar to those observed in the CRT non-exposed survivors while CRT exposed survivors seem to present a different mechanism of lipogenesis. Larger independent studies are needed to replicate these findings and to identify novel BMI-DNA methylation loci among childhood ALL survivors.

13. Characterization of a Prostate Targeted Peptide-Drug Conjugate
   Presenter(s): Timothy Kristedja
   Advisor(s): Dr. Rakesh Tiwari

Doxorubicin is a well-known anticancer agent used for treatment of a wide variety of cancers. However, one of its major limitations is the development of resistance by the cancerous cells. Conjugation of such drugs with certain peptide sequences has been shown to improve cellular uptake, prolong biological activity, and reduce intrinsic cellular efflux. Targeted drug delivery relies on specific interactions that are effective when a disproportionate amount of therapeutic compound accumulates on the cells of interest relative to the accumulation on non-target cells. In this project, a peptide-doxorubicin conjugate was designed, synthesized, and characterized for the targeted treatment of prostate cancer. The peptide targeting moiety of the conjugate specifically binds the extradomain-B of fibronectin expressed in aggressive prostate cancer, and the cleavable linker, GFLG, is specific for cathepsin B which is highly expressed in prostate cancer and other cancers. To physically characterize the peptide-drug conjugate was tested in terms of its stability in phosphate buffered saline, and it was found to be stable with a half-life around 15 hours. To assess the stability of the conjugate during delivery in the bloodstream, the conjugate assayed in vitro in human serum and it was found to have a short half-life around 11 minutes. To ensure drug release by the cleavable linker, it will be assayed with cathepsin B and we expect to verify drug release from the peptide moiety. In all, these findings prove valuable to the design of future in vivo experiments.

14. Cyclic Peptides for siRNA Delivery in Breast Cancer Cells
Presenter(s): Robert Lamboy
Advisor(s): Dr. Hamidreza Montazeri Aliabadi

While short interfering RNA (siRNA) have been shown to effectively silence protein expression, their low biological stability and issues with cellular internalization has hindered their potential. Cyclic peptides have been previously shown to be a viable method of intracellular delivery of siRNA. Many effective cyclic peptides are cationic due to attached amino acid residues such as arginine that assist in their effective cellular uptake as well as peptide-siRNA complex formation. Unfortunately, cellular toxicity is an unintended consequence of the cationic charge. The cyclic peptides: [R5K]W5, [R6K]W5, PEG-CP, [WR]5, [K(WR)W4KC], [K(WR)4W], and [WRWKWRWWRR] at varying concentrations based on their number of nitrogens were complexed with FAM-labeled siRNA and introduced to the breast cancer cell lines MDA-MB-468, MDA-MB-231, and AU565 to measure their cellular internalization efficacy. Cellular uptake was measured by flow cytometry. Our data shows that the peptides [R5K]W5 and [R6K]W5 led to the greatest cellular uptake of the siRNA. Previous experiments have indicated that [WR]5 also attributes to effective delivery although our sample did not show efficacy most likely due to contamination. A CCK assay was used to determine the most effective dosage to mitigate cellular toxicity. Furthermore, the silencing capability of [R5K]W5, [R6K]W5, and [WR]5 were assessed by conjugating with a JAK-2 targeting siRNA with qRT-PCR. The qRT-PCR results showed moderate silencing efficiency that correlated with the cellular internalization results. These preliminary findings could lead to more efficient cyclic peptides for the delivery of siRNA that are less toxic to cells. Overall, cationic peptides show promise in siRNA delivery; however further experiments are needed to optimize their efficacy.

15. Association Between Cancer Exosomes and Prostate Field Cancerization
Presenter(s): Philip Pytak
Advisor(s): Dr. Marco Bisoffi

Field cancerization is a pre-malignant state where cells adjacent to adenocarcinomas experience molecular, genetic, and biochemical changes, including an over-expression of specific proteins. Field cancerization has been associated with tumor multifocality in the prostate, though the mechanism of this association is currently unknown. Identifying specific biomarkers of field cancerization and any of its causes would allow for clinical detection of tumor-adjacent tissue susceptible to tumorigenesis, for potential targets in cancer therapy, and for better grading and staging assessments of prostate cancer. Potential biomarkers for prostate field cancerization are exosomes: cell-secreted vesicles used for cellular communication, based on the hypothesis that exosomes secreted from tumor foci may prime nearby tissue for tumorigenesis. In this study, markers for exosomes and field cancerization, such as CD9, CD63, and FASN, were detected with specific antibodies in human LNCaP prostate cancer cells. Specific detection was ensured by including isotype matched unspecific primary antibodies as negative controls. Our results set the stage for future work, in which we will associate markers of exosomes and markers of field cancerization in human tissue microarrays containing tumor, adjacent, and "disease-free" samples.

16. Developing a Novel High Throughput Enzymatic Assay for Malate Dehydrogenase 1

Presenter(s): Anne Roffler
Advisor(s): Dr. Ameeta Kelekar

Increased glucose consumption and glycolysis is a hallmark of cancer. The regeneration of NAD+, an essential cofactor for glycolysis, had been largely attributed to the activity of lactate dehydrogenase (LDH), which converts pyruvate to lactate. However, diversion of glucose for biosynthesis to support proliferation at key glycolytic intermediates reduces carbon supply to LDH. Thus, cancer cells must rely on alternative pathway/s to replenish NAD+ for sustaining glycolysis while enabling biomass synthesis. Recent studies by the Kelekar lab revealed that cytosolic NAD+ is also replenished by Malate Dehydrogenase I (MDH1) through conversion of oxaloacetate to malate.

As proliferating cancer cells rely on both LDH and MDH1 activity, inhibition of both enzymes promises to be an effective therapeutic approach against these cancers. To identify synthetic inhibitors that are highly specific to MDH1, and not MDH2, the mitochondrial isoform, a novel and sensitive high throughput assay was developed to measure MDH activity. The assay cocktail contains oxaloacetate and NADH, the two substrates for MDH activity, and either in vitro translated FLAG-tagged MDH1 or purified human recombinant MDH1 or MDH2. The readout for activity is oxidation of NADH to NAD+, measured by loss of absorbance at 340 nm over time. Substrate concentrations were optimized through extensive Michaelis-Menten kinetics while enzyme concentration and incubation time were adjusted through kinetic concentration gradients. The assay has emerged as a robust method capable of capturing not only purified recombinant MDH activity, but also the activity of ectopically expressed and in vitro translated MDH1. The results of this study will lay the foundation for a high throughput screen for small molecule MDH1 inhibitors that will be utilized for combination therapy with LDH inhibition to prevent tumor progression.

17. Modeling the Effect of Maternal Immune Response and Copy Number Variation on Human Neural Rosettes

Presenter(s): Sara Walton
Advisor(s): Dr. Theo Palmer

Autism spectrum disorder (ASD), commonly identified by difficulties with social interactions, irregular emotional responses, and stereotyped behaviors, affects 1 in every 68 children in the Unites States. Studies have shown that ASD is a product of interacting genetic risk factors and environmental exposures, the strongest being maternal immune activation (MIA). Fetal development has been implicated in the onset of autism, however, no study has shown what causes ASD to develop in the brain. In addition, Wnt signaling, which is involved in cell proliferation, has been shown to be upregulated in patients with ASD risk genes. Neural rosettes are radially oriented neural progenitor cells that form the neural tube during fetal development. In this study, we characterized the effects of maternal immune response on the morphological and functional characteristics of human neural rosettes. We used an induced pluripotent stem cell (iPSC) model to differentiate neural rosettes, which were then incubated with cytokines. The morphology and physical characteristics of the treated cells was observed using immunocytochemistry (ICC). We additionally aimed to optimize the Drop-Seq system for single cell transcriptomic characterization of the diversity of rosette composition.

Preliminary runs of Drop-Seq have yielded homogenous droplets that contain beads at a relatively high rate of encapsulation. This will aid in the future by setting a baseline in understanding the effect of MIA on developing fetal brains at the single cell level.

18. Mapping Spatial Dynamics: Chromatin Diffusive States in S. Pombe
Presenter(s): Sara Siwiecki
Advisor(s): Dr. Elaine Schwartz

In eukaryotes, DNA is packed onto itself with associated proteins to form chromatin that resides within the three-dimensional (3D) structure of the nucleus. The physical structure of chromatin behaves as a dynamic polymer that can freely diffuse throughout the nuclear volume. Individual chromosomes reside in relatively distinct areas of the nuclear volume, however, the overall architecture and kinetics of non-mitotic chromatin are poorly understood. In this work, we aim to understand the spatial and temporal dynamics of chromatin by quantifying the diffusive states of a range of genetic loci. To follow chromatin dynamics, we randomly integrated an engineered lac operator array with a lac repressor fused to a green fluorescent protein (GFP) into the genome of Schizosaccharomyces pombe (fission yeast) and recorded the lac operator array position over time using fluorescence time-lapse microscopy. The movies we obtained were analyzed to track the fluorescent array locations and quantify their mean-squared displacements. We then mapped diffusive states of various locations across the genome, and our results suggest that these loci, regardless of nuclear volume location, predominantly exist in two distinct diffusive states. In follow-up studies, we are engineering two lac operator arrays 10, 17, 29, 50, 73, and 99 kilobases apart from each other to test the hypothesis that correlative chromatin movement dissipates with increasing distance. Overall, these chromatin studies will give insight into the dynamic architecture of DNA within the nucleus to further the understanding of the physical mechanisms of gene mobilization during activation, silencing, and DNA repair.

19. Investigating Swelling Mechanisms: Electrical Charge of Mucin Vesicles From Hagfish Slime
Presenter(s): Sara Siwiecki
Advisor(s): Dr. Douglas Fudge and Dr. L. Andrew Lyon

When under stress, such as a predator attack, Pacific hagfish (Eptatretus stoutii) release slime as a defense mechanism. The slime is excreted rapidly and can temporarily clog the gills of a predator to allow the hagfish to escape. Hagfish slime consists of two types of cells: gland mucous cells that take in water and gland thread cells that hold the mucous cells together to form a fibrous gel. The mucous cells contain mucin vesicles that expand while taking in water to form the slippery gel component of the slime, although this swelling mechanism is poorly understood. Previous research has suggested that mucin vesicles within the mucous cells undergo swelling to form slime via electrostatic repulsion between positively charged glycoproteins in the mucin vesicle. Other data suggests that mucin vesicles are negatively charged. This project used zeta potential measurements of mucin vesicle surface charge, fluorescence microscopy of mucin vesicles exposed to dyes of differing charges, and DIC microscopy of mucin vesicles exposed to solutions of cations and anions of different magnitudes of charge. The zeta potential experiments indicated a negatively charged mucin vesicle, while

microscopy suggested a positively and negatively charged mucin vesicle. The ionic solution experiments have given information about what ions are necessary for swelling. Thus, mucin vesicles may have positively and negatively charged parts. Further work needs to be done to confirm the charge of mucin vesicles to better understand the mechanism of swelling.

Biological Sciences

20. Hagfish Thread Cell Unraveling
Presenter(s): Dylan Blumberg and Ramteen Rafii
Advisor(s): Dr. Douglas Fudge and Dr. Charlene McCord

Hagfish are well-known for their ability to produce vast amounts of slime from specialized glands, allowing them to escape predatory attacks from gilled predators. Gills are physiologically designed to maximize surface area, which leads to many possible anchor points. The exudate is comprised of two components, mucus vesicles and thread skeins. The precise mechanism in which the exudate interacts with seawater to produce the slime is unknown. One specific factor of slime formation that needs to be studied is how the thread skeins unravel to a length of 15 cm from their microscopic coiled form. We hypothesized that mucin vesicles swell and burst as the thread skeins unravel to form a complex network that entraps the water via viscous entrainment. The thread cells are initially unraveled due to the turbulent force from the water flow, which then catches onto an anchor point. As the water flow pushes the thread cell farther out from the anchor point, it will unravel because one end of cell is immobilized. Once the thread cell is completely unraveled, other thread cells can anchor onto it to unravel. We have coined this process cooperative unraveling, which explains how the slime network can form at such a quick rate. Fresh exudate was extracted from an anesthetized hagfish and transferred to a tank that had a constant flow of water. A planar spoke system was used to simulate the ridges that are present in fish gills. As the exudate was put into the tank, we recorded the interactions of slime exudate with flowing seawater using a high speed camera filming at 240 fps. The mechanism can then be examined on a frame by frame basis, specifically to observe how the mucus vesicles, thread skeins, and seawater interact. The results of this experiment can be applied to a multitude of different fields including medicine as a clotting agent, food science as a hydrogel, and textiles as a synthetic thread.

21. Stabilizing Effects of Trimethylamines in Skein Unraveling of the Pacific Hagfish (E. stoutii)
Presenter(s): Kashika Singh and Marie Starksen
Advisor(s): Dr. Douglas Fudge, Dr. Charlene McCord, and Kevin Jagnandan

Hagfish defend themselves by releasing large volumes of gill-clogging slime. The slime consists of two major components: mucus cells and thread bundles. These thread bundles are kept from unraveling via a seawater soluble protein adhesive. Previous analyses revealed that the gland has a high concentration of trimethylamines with kosmotropic, or protein stabilizing properties. The threads are originally packaged into coiled skeins, or balls of thread, which unravel in the presence of seawater due to the dissolution of the glue holding the thread bundles together. We hypothesized that the

trimethylamines (TMAO and betaine) have stabilizing effects that inhibit skein unraveling. We investigated slime skeins of the Pacific hagfish to evaluate how much unraveling occurs in the presence of these stabilizing components. Slime exudate was collected from hagfish and exposed to different concentrations of betaine, TMAO, and a trimethylamine mixture containing salts. The projected area of the skeins were measured to determine the percent of unraveling that occurred. Previous research in the Fudge lab suggests that there is a strong negative linear correlation between the concentration of the trimethylamines and percent of skein unraveling. Based on preliminary observations, different concentrations of the trimethylamines affect the skein swelling and unraveling, supporting our hypothesis. Researching how these stabilizing kosmotropes affect the skein unraveling contributes to our understanding of how hagfish produce slime and contributes to the biotechnology industry by providing insight to the structure of the skein adhesives. Comprehending the role of the stabilizing proteins may help with the development of future biotechnological advances.

22. <u>Anesthetic Induction Rate in Pacific Hagfish with Clove Oil and 2-Phenoxyethanol</u>

Presenter(s): Emma Whiteley
Advisor(s): Dr. Douglas Fudge and Dr. Charlene McCord

Hagfish are ancient eel-shaped and slime-producing marine animals. The unique characteristics and deployment mechanism of hagfish slime have implications for use as a valuable biomaterial. In order to explore the slime's potential applications, the exudate is collected by electrically stimulating a sedated hagfish's slime glands. The current anesthetic procedure in the lab utilizes a 100mg/L clove oil solution, however this protocol yields inconsistent induction times. This research aims to identify the optimal anesthetic dosage to reduce Pacific hagfish (PHF) induction time and variance while minimizing the amount of distress experienced by the hagfish. To develop a standardized mixing protocol, Sudan black dye was used to stain the clove oil anesthetic and visualize how the oil droplets mixed with chilled seawater under varying conditions. Additionally, videos of hagfish exposed to anesthetic were analyzed to generate a method of categorizing distinct stages of anesthesia and recovery. Dose response curves were generated for clove oil (50-250mg/L) and another common fish anesthetic, 2-phenoxyethanol (2-PE; 133-400mg/L) by measuring induction time in 26 hagfish. The new mixing protocol results showed significantly reduced variance in induction time compared to previously used protocol. Video analysis revealed five distinct stages of hagfish anesthesia: (name them here). The dose response curve for clove oil showed an exponential decrease of induction time with increasing clove oil concentration. No significant relationship between induction time and concentration of 2-PE was observed. Distress was found to be directly related to anesthetic dosage for both clove oil and 2-PE. The optimal dosage for effective induction and minimal distress was concluded to be 175 mg/L of clove oil anesthetic. Further research will focus on optimizing the amount of time in stage V and reducing recovery times.

23. How Do Hagfishes Move in Burrows?
Presenter(s): Stacey Zuppa and Lauren Friend
Advisor(s): Dr. Douglas Fudge, Dr. Charlene McCord, and Kevin Jagnandan

Hagfish are jawless marine pre-vertebrates who display unique locomotor capabilities by burrowing into the ocean floor and moving through tight spaces. They play a crucial role in benthic ecosystems and utilize their locomotor abilities to prey on benthic invertebrates, avoid predators, and feed on large carcasses. However, little is known about how they burrow and travel through tight channels. We investigated hagfish locomotion by observing the biomechanics of behaviors associated with burrowing and moving through tight spaces. A video camera was used to record the movements of hagfish from a dorsal view through a custom-built plexiglass chamber that mimicked various tunnel widths they may encounter in their natural habitat. At channel widths considerably larger than the hagfish's diameter, the hagfish demonstrated the use of lateral undulation, with muscular waves travelling along alternate sides of the animal's body and generating swimming forces that propelled it forward. At smaller channel widths, the hagfish exhibited an "external concertina" behavior in which it adopted a wavelike morphology and used the chamber walls to brace itself and push forward. At the smallest channel diameters (i.e. equal to the hagfish's diameter), "internal concertina" patterns of movement were observed in which the body musculature took on a muscular wavy shape and braced against the walls within the loose skin of the hagfish. These results are consistent with research previously conducted on legless amphibians (i.e. caecilians), and implicates the flaccid subcutaneous sinus in the burrowing of hagfishes through narrow tunnels. This research provides insight into the behavior and ecology of hagfishes, as well as the evolution and biomechanics of burrowing in elongate animals.

24. How Does Temperature Regulate Humic Substance Reduction in a Northern Minnesota Peatland?
Presenter(s): Jessica Rush
Advisor(s): Dr. Jason Keller and Dr. Cassandra Zalman

Peatlands store one-third of terrestrial soil carbon and play an important role in the global carbon cycle. In addition, peatlands are responsible for a significant fraction of the global flux of the potent greenhouse gas methane, and understanding controls of methane flux from peatlands has important implications for the global climate. Recent work suggests that the microbial reduction of humic substances can suppress methane production and may constrain peatland methane flux in response to ongoing climate change. To determine the direct effects of temperature on humic substance reduction, soil cores were collected from a peatland in northern Minnesota as part of the Spruce and Peatland Responses Under Changing Environments (SPRUCE) project. Soils from 10-20, 75-100 and 175-200 cm depth increments were incubated anaerobically at 5°C or 18°C for 84 days. Humic substance reduction potential (measured as electron shuttling capacity) occurred faster, and suppression of methane ended sooner at warmer temperatures. The potential for indirect effects of temperature (e.g., through changes in soil quality) were explored in the same peatland in plots which had been experimentally warmed to +0, +2.25, +4.5, +6.75 and +9°C (above ambient conditions). There was no impact of ~2 years of experimental warming on humic substance reduction potential measured in soils incubated at a common temperature (18°C) for 42 days. Taken together, this

suggests that in the short-term, direct effects of warming will diminish the potential for humic substance reduction to suppress methane production and that this will not be mediated by ecosystem-level changes resulting from warming. Preliminary data from in situ experiments also suggests that temperature effects humic substance reduction by indirectly regulating the availability of oxidized humic substances.

25. Preliminary Investigation of Top-down and Bottom-up Effects on Methane Production in Northern Minnesota Peatlands
Presenter(s): Carson Tinucci, Emily Hanna, and Jessica Rush
Advisor(s): Dr. Cassandra Zalman, Glenn Woerndle, and Dr. Jason Keller

Peatlands are important ecosystems in the global carbon cycle, storing one-third of the total terrestrial soil carbon and producing the potent greenhouse gas methane as a byproduct of microbial decomposition. In these ecosystems, methane production can be controlled by many factors such as substrate availability, a top-down mechanism, and microbial community composition and population size, a bottom-up mechanism. This study explored methane cycling in two peatlands located in northern Minnesota (USA). Surface peat (0-25 cm) and deep peat (100-150 cm) were collected from both sites and anaerobically incubated in the laboratory for six weeks. Various treatments were applied to the soils: addition of 2-bromooethanesulfonate (BES) to selectively inhibit methanogenesis; addition of labile carbon in the form of isotopically-labeled glucose to mitigate potential carbon limitation; incubation at either 4 or 14 degrees C to determine the effect of temperature on microbial dynamics. Carbon dioxide, methane, and hydrogen concentrations were determined using gas chromatography to quantify and elucidate possible control mechanisms. Additionally, the flow of carbon was isotopically traced using cavity ring down spectroscopy. Preliminary data suggest that these systems may be controlled by microbial community composition—a bottom-up mechanism. As the global climate continues to change, understanding the dynamics of methane production in peatland ecosystems is vital.

Business

26. Capitaliser sur une Nouvelle Génération de Collectionneurs d'Art: Analyser le Succès du Groupe Louis Vuitton Moët Hennessy
Presenter(s): Cameron Hall
Advisor(s): Dr. Allen MacVicar

This paper examines art as the primary driver of success for the Louis Vuitton Möet Hennessy (LVMH) Group, who has emerged as the most prestigious player in the luxury retail space. Artistic expression appears to be the secrete behind LVMH's growing market share in every sector they operate: ranging from designer clothing & accessories to wine & spirit brands. LVMH operates a number of different Maisons or houses that cover different market sectors. Each Maison is comprised of independently run designer brands who set the standard for top quality, prestige, and artistic expression. The objective is to bridge the connection between the art and designer markets. In my business courses, particularly International Marketing and Business Capstone, I have studied market data, annual

reports and case studies to examine the profitability of LVMH, who manages to achieve international brand loyalty, rapid growth among most subsidiary designer brands, and high margins, even in recessionary times. I was inspired by research conducted about the positive brand image derived from never discounting products and maintaining consistent premium prices—a standard among LVMH brands. The following points are explored in the paper: Firstly, LVMH was born from french cultural values of quality artisanship and preserving history. Secondly, LVMH enables their designers' artistic creativity to drive their products, not just current market trends and data. Thirdly, each designer brand [like an artist] operates independently and upholds their own identity & artistic integrity. Fourthly consumers, as humans, are psychologically wired to collect art. And Lastly, the designer market draws incontestable parallels to the art market. The success of the LVMH can be attributed to the fact that consumers perceive and buy their products as art. The probable conclusion is that the designer bands under LVMH have given modern day consumers a vehicle to express themselves artistically and tap into their inherent impulses to collect art through the designer clothing and accessory market.

Chemistry

27. Constructing an Ultra-high Vacuum Chamber System for Acquiring Spectra for Surface Enhanced Raman Spectroscopy
Presenter(s): Amy Lam and Connor Carnahan
Advisor(s): Dr. Jerry LaRue

The ultra high vacuum chamber is responsible for creating atomically clean spaces for Raman active samples while acquiring data. Investigating catalytic activity in Fischer Tropsch CO hydrogenation and plasmon enhanced gold nanoparticle catalysts utilize a vibrational spectroscopic technique: Surface-Enhanced Raman Spectroscopy(SERS). To prevent unwanted chemical reactions from affecting spectra taken from prepared SERS samples, an operational vacuum chamber can expel as many gas molecules from the enclosed space. Reaching the desired pressure for low vacuum and ultra high vacuum is not a trivial process. Aspects to building the chamber with a maintained pressure relies on the lower population of particles and the distance between the particles, a relationship known as the mean-free path. In the chamber, however, where pressure is below the standard atmospheric pressure and the force of gas particles hitting the enclosed space is too small, it must be measured indirectly in low vacuum and ultra high vacuum systems. The components that go into designing an ultra high vacuum chamber rely on CAD programs to create parts that accommodate the different flange sizes on the chamber's body. Overall, this project involves the process of designing a chamber system with select gauges and pumps capable of maintaining target low and ultra high vacuum pressures, creating an optimal setup to obtain Raman spectra from surface reactions.

28. A Comparative Study of Smoothing and Visualizing Methods for a Raman-Active Polycrystalline Gold Surface
Presenter(s): Thang Nguyen
Advisor(s): Dr. Jerry LaRue and Molla Islam

In Chemistry, Raman Spectroscopy is a very important and practical tool in providing the structure of a molecule. The process relies on the effect of Raman scattering, or inelastic scattering, of monochromatic light. Because the natural and spontaneous Raman scattering is very weak, it is crucial for Raman Spectroscopy to be done on a special surface that will enhance the effect. Such surfaces are called Raman-Active surfaces.

This study focuses on the process of generating a Raman-active surface on a polycrystalline gold sample. In general, a good Raman-active surface possesses a well -defined, nanoscale-roughened structure. In order to achieve such precise roughness from a raw gold sample, smoothing and polishing the surface of the sample is the most vital step of the process. Mechanical polishing (M), chemical polishing (C), and electrochemical polishing (E) procedures are investigated in this study to determine the most optimal and specialized polishing technique for gold surface. The changes in the quality of the surface are then visualized using Atomic Force Microscopy (AFM). It has been shown through AFM analysis, that (M) sample demonstrates best smoothing effect, with rough peaks reduced from 1 um to 250 nm scale, but the best smoothness of the surface was obtained from the combination of all three polishing steps.

29. Effects of Simulated Physical Weathering on the Bioaccessibility of Arsenic of Mine Tailings
Presenter(s): Brenda Ruvalcaba and Justin Cooper
Advisor(s): Dr. Christropher Kim

Precious metal mining has been a lucrative industry in California. However, many of the processes which concentrate precious metals such as gold also indiscriminately concentrated other trace elements, many of which are toxic. One such metalloid is arsenic, a known carcinogen. Unfortunately, much of the waste from precious metal mining in California was simply pushed into piles, called tailings piles, and abandoned. The aim of this study is to simulate physical weathering of mine tailings and measure its effects on bioaccessibility of arsenic. Mine tailings samples collected from Empire Mine in Grass Valley, CA were first passed through a series of sieves and separated according to size. Select size fractions were pulverized using a ring mill in order to simulate physical weathering, and the reactive surface area of both the ground and unground samples was measured using BET analysis. In vitro simulated gastric fluid (SGF) extractions were performed on ground and unground tailings to determine arsenic bioaccessibility. X-ray absorption fine structure spectra were collected at the Stanford Synchrotron Radiation Light source on beamline 11-2 which were used to identify arsenic speciation, which affects its bioaccessibility, through linear combination fitting. Speciation analysis and SGF data were combined in order to observe the removal of specific arsenic species as well as the effect of weathering on those species' removal. Through simulated physical weathering, it is possible to understand how the health risks of a contaminated site may evolve over time which is important when prioritizing sites for cleanup.

Communication Studies

30. Water Conservation Messaging on Social Media
Presenter(s): Brennan Hobbs and Eunice Kwak
Advisor(s): Dr. Kerk Kee and Dr. Riva Tukachinsky

The Strategic Environmental Communication Lab designs and tests water conservation messaging. Previous studies completed by the lab conducted a survey of water conservation messaging in California and identified 12 typologies that describe these messages (Liang, et al., 2017). This study developed messages that fit into three of those typologies and tested them in a focus group environment. The three typologies analyzed were goal-setting, social norms, and referrals and redirections. "Goal-setting" sets an achievable objective for the audience to strive for, "social norms" invokes the beliefs individuals hold about their peers, and "referrals and redirections" direct the audience to another source of information (Liang, et al., 2017). Messages were developed based on these strategies with some research questions in mind, such as, "What messaging inspires audiences to set a suggested goal as their own? What makes social media users click on links to external sources of information? How much do audiences care about the behaviors of their peers related to water conservation?" The developed messages were tested in focus groups consisting of students from Chapman University's School of Communication. The feedback on the messages was consistent, and will be taken into account as these messages are prepared to be included in a more robust study.

31. The Good, the Bad, and the Risky of Water Conservation Messages
Presenter(s): Eunice Kwak
Advisor(s): Dr. Jake Yuhua Liang and Dr. Kerk Kee

This research applied the grounded theory approach (Corbin & Strauss, 1990) and analyzed qualitative comments by survey participants (N=208) to understand perceptions regarding the effectiveness of water conservation messages. We organized message strategies emerged from the data into four categories: strategies to apply, positive themes, negative themes, and tension double binds. Strategies to apply (i.e., specific actions, visual appeal, short and concise, and audience analysis) consist of messages that improve positive reactions when included; and they result in negative reactions when excluded. Furthermore, certain positive (i.e., statistics, credibility, and self-efficacy) and negative (i.e., overexposure, and visual-text incongruence) strategies resulted in improved positive or negative attitudes when included, but not necessarily affecting overall effectiveness when absent. Tension double binds (i.e., popular culture and media references, high context references, and humor) elicit both negative and positive reactions from viewers depending on their attitudes towards the strategies. We call the four strategies to apply and the three positive themes 'the good,' the two negative themes 'the bad,' and the three tension double binds 'the risky' environmental message design strategies.

32. How Education Facilitates the Adoption of Cyberinfrastructure

Presenter(s): Chloe Pace
Advisor(s): Andrew Schrock and Dr. Kerk Kee

Cyberinfrastructure (CI), also referred to as e-science, is an immense database that stores and organizes data while allowing users (researchers, scientists, doctors, etc.) to communicate and share large capacities of information. CI has created a breakthrough in organizational technology through the use of high performance computing. OCT Group's purpose is to solve challenges in the scientific virtual organization of CI through learning about stakeholders' experiences and using that data to find ways to improve learning. Through qualitative research of 102 interviews nationwide, grounded theory is used to develop strategies and practices to facilitate the adoption, diffusion and implementation of CI with new and different groups and organizations. This poster examines the relationship between educators in CI and how they facilitate the adoption and diffusion process for new CI stakeholders. Educators play a key role in the process of adoption and diffusion. Their outreach connects them to the community as they teach, assist, and support new CI stakeholders. We found that educators may introduce CI to a group, teach training workshops, and/or provide help and assistance for new stakeholders. Educators' efforts of helping CI stakeholders grasp a firm understanding of CI improves the adoption experience, ultimately aiming at revolutionizing science and research through a facilitated diffusion process.

33. Training Undergraduate Researchers in Theory and Methodologies of Cyberinfrastructure

Presenter(s): Tyler Papera
Advisor(s): Dr. Kerk Kee and Andrew Schrock

One purpose of the Organizing, Communication, and Technology (OCT) training research project is to train communication students to research cyberinfrastructure (CI). Some of our practices include weekly readings; discussions; and completing and presenting a research poster. Best practices for onboarding student researchers will be identified, with the intent to act as a guide for the training and development aspect of OCT. This poster is based on my own personal experience teaching two research assistants. Through first-hand recollections, I will reflect on the successes and challenges of teaching CI methodologies and theory to students. These practices and methodologies are beneficial to CI research teams because they can serve as a learning-guide for a group that is introducing new members to the concept of CI.

34. Understanding Group Communication in Capacity Building in Cyberinfrastructure

Presenter(s): Raizi Simons
Advisor(s): Andrew Schrock and Dr. Kerk Kee

Cyberinfrastructure (CI) is composed of many characteristics and layers, in which individuals working with a network of supercomputers in the technological world, understand how to connect and communicate efficiently. In this poster, we will distinguish how group communication (i.e. education) among Cyberinfrastructure (CI) stakeholders helps build and grow an organization's capacity, or the ability of an organization to accomplish its mission effectively (Eisinger, 2002, p. 128). "Stakeholders

garner more capacity to develop better Cyberinfrastructure (CI) tools, improve complex analysis of big data, grow the size of their team, and produce stronger publication" (Kee & Schrock, 2017, p. 17). This can be summed up as communicative capacity building strategies. Through the use of one particular communicative capacity building strategy, group communication, one can distinguish how education guides individuals to conduct timely and scientific results, in order for an organization to perform their duties thoroughly.This research project examines interview transcripts collected between 2015 and 2017. Methodologically, grounded theory will be used to identify common educational themes using the computer software, NVIVO. Group communication strategies included being attentive to the processes and inner-workings of small groups in an effort to help work groups improve their scientific and organizational outcomes.

35. Predicting College Students' Likelihood of Disclosing Incidences of Sexual Violence: An Application of the Disclosure Decision-Making Model
Presenter(s): Katherine Simpson
Advisor(s): Dr. Hannah Ball

College student self-disclosure of experiences of sexual violence is critical to initiate appropriate coping procedures and to attempt to sojourn the reoccurrence of sexual violence perpetration on college campuses. However, research suggests that nondisclosure is common amongst survivors of sexual violence; most recently, results of the Campus Climate Survey conducted at Chapman University in April of 2017 indicated that 36% of students did not disclose an incident of unwanted sexual contact to anyone. Using the Disclosure Decision-Making Model (DD-MM; Greene, 2009) as a framework, the present study investigates variables associated with a college students' willingness to disclose incidences of sexual violence in hopes to uncover what influences college students to reveal their experiences with these incidents. Data will be obtained via an anonymous online survey of approximately 150 college students and participants will be randomly assigned to answer survey questions related to disclosure of a hypothetical incidence of sexual violence to one of three disclosure targets (i.e., close friend, on-campus resource, or off-campus local police). Following the DD-MM, expected results are that likelihood of disclosure will be predicted positively by a supportive anticipated response of the disclosure target, relational quality with the disclosure target, and disclosure efficacy, and predicted negatively by beliefs in stigma surrounding sexual assault. Implications for understanding the nuances of disclosure as it applies to the context of college students' experiences of sexual violence will be discussed, as well as directions for future research and practice.

36. The Impact of Celebrity Endorsement of a Conspiracy on the Media Consumers
Presenter(s): Lindsay Stern, Kendal Munyon, and Hunter Davis
Advisor(s): Dr. Riva Tukachinsky

Celebrity endorsement has a strong influence on the general population. However, this effect was typically studied in the context of celebrities' support for non- controversial topics. We wanted to see if celebrities would have the same effect when they supported controversial topics. It is hypothesized that those who are exposed to a liked celebrity endorsing a conspiracy theory will be more inclined to accept the theory.

Additionally, celebrity endorsement for a controversial topic has the potential to cause the celebrity to be less liked. If an individual learns that a celebrity supports a controversial topic like a conspiracy theory, an individual might start to question why they support and like that celebrity if they do not share the same ideas or values. Therefore, it is hypothesized that those who are exposed to a liked celebrity endorsing a conspiracy theory will report lower parasocial relationships (feelings of kinship) with the liked celebrity than those who were not exposed to the endorsement.

In an experiment, participants were asked to choose their favorite celebrity. Participants were then randomly assigned to be exposed or not to be exposed to a fake news article discussing a celebrity endorsing the conspiracy theory regarding the moon landing. Participants were then asked questions to measure their parasocial relationship with the celebrity and their opinions regarding the moon landing. In line with H1, people reported stronger belief in the conspiracy theory if they were exposed to the article. However, H2 was not supported as there was no effect of celebrity endorsement on parasocial relationships.

37. Effect of Female Superhero Body Types on Parasocial Relationships, Perceived Homophily, and Self-Esteem of College Women

Presenter(s): Alyssa Vega, Ashley Cleveland, and Michael Farzinpour
Advisor(s): Dr. Riva Tukachinsky

This study examines how exposure to female superheroes body images increases the strength of parasocial relationships, perceived homophily, and level of self-esteem that female college students experience. Three images of female superheroes whose body types have been manipulated into round, muscular and hyper-thin. Eighty one students in the Communication Studies Subject Pool at a western university were randomly assigned to view one of three images of the female superhero. After viewing the images, the participants were asked to answer three Likert scales to determine the strength of parasocial relationships to the superheroine, perceived homophily and self-esteem. The results indicate that a female superhero with a muscular body type is the most prominent in the strength of parasocial relationships and increase in self-esteem of female college students compared to round and hyper-thin body types, whereas none of the body types had a significant effect on perceived homophily.

38. Evaluating the Effect of Hue in the New Online Real Estate Market

Presenter(s): Alexis Wolford and Bennett Royce
Advisor(s): Dr. Riva Tukachinsky

Online home shopping has become increasingly popular with the development of user-friendly real estate websites. Consumers choose homes based upon multiple factors. This study wants to examine the effects of hue in the online listing of a home since the hue carries no explicit information about an object. This makes it an unconscious factor on our preferences; therefore, understanding the psychological effects of color is key here. The purpose of this study was to take a first step into researching consumer color preferences with online home listings. Different color conditions were applied to the same photos (either red hue or blue hue manipulation), and then emotions, liking, and attitudes towards the home were measured after. The results showed no significant differences between the hues and emotions and attitudes; however, there was more of a significant difference

among the previous homebuyers than with non-previous homebuyers. Also, there was a correlation between positive emotions and attitudes towards the home, which has some practical implications that will be discussed.

Computational Science

39. Extensible Messaging and Presence Protocol (XMPP)
Presenter(s): Isabella Cedric, Matthew Greenberg, and Matthew Schwab
Advisor(s): Dr. Michael Fahy

Our research project focuses on a key component of computer networking, messaging. There are many messaging protocols that exist, but only a few are really used in today's world. The most widely used protocol used today is SMTP (Simple Mail Transfer Protocol), which is used for sending and receiving emails. Our group will be looking at a different messaging protocol called XMPP (Extensible Messaging and Presence Protocol). XMPP, an application layer protocol is an open XML technology for real-time communication, which powers a wide range of applications including instant messaging, presence and collaboration. XMPP is designed to be extensible, meaning, it has been designed to grow and accommodate changes. As there are various choices in communication protocols and communication patterns provided by XMPP, it supports the Internet of Things platform. With multiple architectural concepts applicable, it is preferable in terms of ensuring that functional and performance requirements are met, thus boosting the interconnection of computing devices and enabling everyday objects to send and receive data. The purpose of our project will be to design and program an XMPP messaging protocol (using Java). Chapman's computer networking course goes over many messaging protocols, but does not dive into the XMPP protocol, which is one of the reasons why we chose create an XMPP protocol. In conclusion, we will have a fully working XMPP messaging protocol that will allow two clients to send a receive messages.

40. Loca, Location Scouting Made Easy
Presenter(s): Jeffrey Haskell
Advisor(s): Dr. Michael Fahy

Loca is a single page web application that serves to group together and display available properties for filming (both private and public), jurisdictional rules and regulations in regards to film sets, and permit information. The application is developed using the MEAN stack which stands for Mongo Databases, Express Servers, Angular, and Node.js. This software allows for quick and secure data transmission as well as scalability for user growth. Encryption is done with a third party package by JSON Web Token that uses the industry standard RFC 7519 method making it OAuth 2.0 compatible. Tokens from the client must be approved if they wish to perform any actions upon the database. The account system uses a third party package by Auth0 that forces both the client and server to be approved by their system before logging a user in. Once logged in a user has two hours before their token expires. The location, user, and collection tables are stored without SQL using pure MongoDB syntax. Research on the topic was conducted mainly through reading software documentation, online tutorial videos, and trial and error. It wasn't until trying out several other web frameworks that the

MEAN stack became the solution. This project is currently catering film students at or near Chapman University to provide an easier and more informative process when selecting a location. The goal is to gather over two hundred locations then launch the website to the Chapman community. If the web application becomes a hit locations can be scouted elsewhere to help students at other schools.

41. Exploring the Issues in Cybersecurity Through the Design and Implementation of a Network Math Game and Graphical User Interface
Presenter(s): Parker Janke, Moath Alomar, and Mohammed Alsoheem
Advisor(s): Dr. Michael Fahy

The purpose of the project is to explore issues in Cybersecurity by implementing a secure network game using multiple Java technologies. The project addresses security concerns by encrypting and decrypting messages and by securing the network connection using the SSL (Secure Socket Layer) security protocol. SSL technology allows users and server to commute in secure connection. The data is encrypted before sending and is decrypted when received. The server presents a certificate (public key certificate) to the user as part of the authentication process. The data is encrypted with this certificate to ensure confidentiality. Once encrypted the messages cannot be modified or viewed by a third party. Java 8 provided the classes that are used to generate the keys (KeyPairGenerator, SecureRamdom, KeyPair, PrivateKey, PublicKey…). The client and server use FSMs (Finite state machines) to maintain the game states. Each group of players has its own state. Each player (in a separated thread) also has the state. The problem of shared data is also solved. Java supports concurrency with mechanisms such as Thread/Runnable, Lock, Synchronized statements, notify and wait. Each class in the project implements a specific task. The design patterns organize the classes and assist with finding and fixing bugs and with code maintenance. The following design patterns are used: Singleton pattern (provide game questions that are from file), State pattern (maintain game state), Command pattern (implement loose coupling in a request-response model), Iterator pattern to iterate through the question list.

42. Creating an Accurate 3D Model of a City Through the Fusion of Available APIs and Datasources
Presenter(s): Ryan Starback, Andre Perkins, Keanu Kauhi-Correia, Majid Aziz, and Kevin Moreno
Advisor(s): Dr. Michael Fahy

The purpose of this research project is to create an accurate 3D representation of a city using a variety of datasources and APIs. The outcomes will include the subjective and emperical accuracy of the model, theoretical improvements, and its potential contributions to city planning. The main datasource will be OpenStreetMap (http://www.openstreetmap.org) and main API will be Mapbox Terrain (https://www.mapbox.com/vector-tiles/mapbox-terrain/).
Other datasources and APIs could include information obtained via LIDAR, other depth sensing technologies, and street-view images/panoramas. The challenges will include the cleansing and fusion of applied data.

English

43. The Poetry of Ai Ogawa and Joyce Carol Oates and the Poetics of Violence
  Presenter(s): Marina Burandt
  Advisor(s): Dr. Lynda Hall and Dr. Rei Magosaki

The poetry of Ai Ogawa and Joyce Carol Oates is powerfully written, tackles difficult subjects, and often shows a grotesque side of the world we may not wish to see. This is not a reason for avoiding their work, but rather a motive to learn more about historical feminism and contemporary feminism. Violence is a multifaceted subject, particularly when it is intersected by race, class, and gender. Oates and Ogawa use their unique perspectives as women to show the multiplicity of violent acts and their transitory qualities. The poster includes one full poem from each writer, or simply extractions from them with a brief analysis next to it. Included are comparative graphs about modern day violence against women next to similar charts of violence from the seventies and eighties to reflect the era of second wave feminism that Oates and Ogawa were steeped in. There are some of my basic statements from my thesis regarding domestic violence and the origins of violence in the powerful and the subjugated. This is alongside definitions of intersectionality, domestic violence, rape, and an overview of the wave theory of feminism.

44. Orienting Ornstein: Digital Space and Narrative in Dark Souls
  Presenter(s): Jesse Cupp
  Advisor(s): Dr. Lynda Hall and Morgan Read-Davidson

This project is an exploration of how navigable space functions as a means of conveying narrative in From Software's 2011 video game Dark Souls. Using Janet Murray's and Ian Bogost's definitions of digital space, the analysis begins in an examination of Daniel Punday's theory of primary and orienting space in digital media. This theory places a distinction in between space in which a player can implement meaningful change (i.e. primary space) and the inaccessible space that provides context and meaning to the primary space (i.e. orienting space). Though this distinction is helpful in understanding digital spaces, Dark Souls complicates this dichotomy by depriving players of purely orienting spaces. Instead, the game provides players with primary spaces that express a story on their own. This raises the question of whether or not we can truly separate a game's spatial elements and its narrative.
This paper addresses this question by using Eric Zimmerman's and Katie Salen's concept of digital semiotics combined with Gonzalo Frasca's theory of ludology (i.e. the study of games) to analyze the compositional elements of Dark Souls. By analyzing the game in this manner, the paper concludes that formal elements such as level design, enemy placement, and item descriptions all serve to orient each other in the game's space, providing a patchwork narrative that, inversely, imbues all of the individual game elements with meaning. Finally, this observation illustrates an altogether new narrative potential in video games that surpasses more traditional media in its complexity and possibility of depth.

45. Time, Distance, and Space in Louise Erdrich's Love Medicine

Presenter(s): Natalie Figueroa
Advisor(s): Dr. Lynda Hall

This project will evaluate Louise Erdrich's novel, Love Medicine, and its usage of time, distance, and space. Erdrich's approach with time, distance, and space are demonstrated through the order, multiple voices, and time-span presented in her novel. As each of these narrative, or rhetorical, choices are being employed, they are forming a compelling and unique story of life in between cultures. With Erdrich's Love Medicine and the foundational work of scholars in narratology, such as Seymour Chatman and Gerard Genette, readers will be able to identify the ways in which time, distance, and space are significant rhetorical choices that create a meaning, or understanding, of the postmodern experimental novel. As the notions of time, distance, and space offer an understanding of the novel, they also offer an understanding of the novel in such a way that requires a specific level of interaction from the reader. Erdrich offers a distinctive example of postmodern fiction as she takes the European structure construct and deviates from that construct in order to create her own innovative, experimental novel that requires an engagement and interaction with the text more closely than one would with the regular European construct, or the linear ordered novel. Therefore, this paper demonstrates that novels can employ rhetorical choices that require a higher level of interaction in order for the reader to make any sort of meaning, or understanding, in fiction. Such concepts will be displayed through a poster design that illustrates time with the narrated years, space with the physical places the narration occurs, and distance with the area that is between places, people, and cultures.

46. Subverting the Colonial Novel: "The Stranger" and "The Meursault Investigation"

Presenter(s): Anastasia Finney
Advisor(s): Dr. Justine Van Meter and Dr. Lynda Hall

In 1942, Albert Camus published his famous novel "The Stranger," in which the narrator of the story senselessly murders an individual never provided any identity other than "the Arab man." In 2013, Kamel Daoud penned his novel "The Meursault Investigation," a retelling of the classic "The Stranger," yet this time narrated from the perspective of the murdered man's brother. Through this approach, Daoud ascribes identity to "the Arab man," while wrestling with the difficulties within identification as Algerian and/or French-Algerian. This research will explore how Daoud utilizes the tropes and situations Camus provided in order to successfully subvert the original novel. These instances include the similarities between the narrators, the depiction of mothers, women, and femininity, the consequences (or lack thereof) of murder and imperialism, the concepts of religion, the significance of the geography of Algeria, and the rhetoric of strangeness. Postcolonial literary theory will be the primary framework of the research, specifically using the works of Edward Said, Homi Bhabha, Salman Rushdie, and Frantz Fanon to consider the topics of identity, displacement, hybridity, the other, imaginary homes, and the third space in relation to the two texts. The typically attributed absurdism and existentialism of "The Stranger" will also be reviewed through a postcolonial context and applied to the analysis of "The Meursault Investigation." The research will consider the status of the postcolonial remake as a genre in and of itself, the definition of success within this genre, and the power and implications it holds in regard to the possibility (or impossibility) of decolonization and justice in both the modern day and future.

47. "'Tis Pity She's a Whore" and "Duchess of Malfi" Relevance and Contribution to the Modern Rape Culture Discussion

Presenter(s): Emily Garcia
Advisor(s): Dr. Lynda Hall, Dr. Jan Osborn, and Samantha Dressel

Sexual assault on college campuses is a public health issue that begs attention to modern rape culture. This study establishes rape culture as it affects college campuses, school policies and court decisions. Close readings of seventeenth century plays, John Ford's "'Tis Pity She's a Whore" and John Webster's "Duchess of Malfi" reveal rape culture traditions that mirror modern case proceedings. The paper examines representations of female sexuality and the inevitable punishment for said sexuality in both plays. The article is specifically working to conceptualize as well as compare the 400 hundred year old plays with current cultural debate to prove not only relevance of seventeenth century playwrights Ford and Webster, but the importance of extending the feminist conversation into works that perhaps the feminist message was not intended to be received as such.

48. Choke On My Cocksuredness; An Analysis of the Patriarchal Structures in Modern Television

Presenter(s): Emily Gimbel
Advisor(s): Dr. Lynda Hall

For my project, I analyzed the portrayal of masculinity in The Sopranos and Mad Men, two of the most prominent dramas from the Age of Difficult Men era of television. The Age of Difficult Men began in 1999 with the premiere of The Sopranos and concluded with the finale of Breaking Bad in 2013. It is named as such after the influx of unconventional and sociopathic male protagonists that flooded networks after The Sopranos' debut. The most direct sequel to The Sopranos is Mad Men, as it was created by former Sopranos writer Matthew Weiner. The protagonist of Mad Men, Don Draper, has often been described as sociopathic; however, the catharsis that he experiences in the series finale proves that he is actually incredibly empathetic.

I intend to examine the importance of why Don and other male leads, created in the image of Tony Soprano, are not true sociopaths. Tony argues that the ideal man is "Gary Cooper, the strong silent type," yet Don's struggle with how to manage his feelings is a key aspect of his character development. Don is a walking contradiction, because he is both idealized in the twenty-first century as a paragon of masculinity and a clear representation of the damage done onto young men by the idea that they must be strong and silent. I argue that Don is not truly a simulacra of Tony Soprano, because Tony sheds his positive qualities and ultimately becomes the villain in his own story, whereas Don eventually seeks redemption.

Additionally, the uniformity of The Age of Difficult Men has given rise to an era of television that focuses on more diverse protagonists and their attempts to healthily navigate young adulthood. Modern comedies such as You're The Worst and Crazy Ex-Girlfriend often focus on mental illness just as Age of Difficult Men dramas did, but do so through characters who range in age, sexuality, and ethnicity, rather than continuously exploring the world through the perspective of middle-aged white men.

49. Time and Understanding
    Presenter(s): Sydney Higo
    Advisor(s): Danika Hazen

My creative project covers the topic of transgender youth and highlights parent's acceptance of their children's identity. This dialogue focuses on a couple discussing their son's identity in which they begin to question whether or not he identifies as male. The mother confronts the father on her hunch that their son could possibly transgender. The father responds with disapproval and displeasure. I wrote this dialogue in order to bring to light transgender youth because parents who have to experience this must be prepared and know how they should raise their child. I believe that as a parent knowing how to best support one's child is a difficult task to face especially when the child is questioning his or her identity. From my research, most transgender people experience gender dysphoria which is distress caused from the mismatch of their sex assigned at birth and their true gender. This is why it is important to explore and bring awareness to this topic in order to help transgender youth feel more comfortable in today's society. Family support is important for transgender youth in order to predict greater social support and overall self-esteem. As transgender youth and teen rates begin to surge it becomes more and more crucial to explore these topics.

50. The Generation Gap of Acceptance
    Presenter(s): Shelby Klug
    Advisor(s): Danika Hazen

This creative project covers the topic of the acceptance of the LGBTQ community and how different generations tend to be more accepting and tolerant to the LGBTQ community. As new social issues develop regarding the topic of the LGBTQ community, Americans seem to be on two different ends of the spectrum. While some embrace and lift up these individuals, others detest and disagree with their lifestyle. People tend to be very stubborn about their beliefs when it comes to the LGBTQ community because of how they were raised. Those who were raised prior to today's generation of millennials tend to be less accepting because the topic of being transgender or gay was never as relevant or prominent in the media like it is today. Younger people tend to be more accepting of the LGBTQ community because it has become prominent in the media and in society's culture. Shows such as Ru Paul's Drag Race, bring the topic of being transgender into the spotlight. This creates a sense of familiarity with younger generations because they are exposed to the LGBTQ community at a younger age. Older generations never got this exposure, resulting in them being uncomfortable, which ultimately leads to their disapproval and stubborn behavior when it comes to accepting members of the LGBTQ community.

51. "Leave All The Rest To Me": Lady Macbeth's Strategic Gender Subversion and Epistemic Power
Presenter(s): Rebecca Malkin
Advisor(s): Dr. Myron Yeager and Dr. Lynda Hall

Not the evil monster as she is so often defined, Lady Macbeth's subversive gender performance exposes a rich combination of human forces accessible only outside culturally-intelligible boundaries of identification. Often met with scholarly criticism for her failure to conform with standards of gender intelligibility, Lady Macbeth has yet to be recognized for unleashing an inherent human potential to manipulate oppressive socio-cultural institutions, reshape social consciousness, and instigate an epistemic revolution through strategies of subversion. Armed with an anachronistic yet crucial awareness of socially instituted and maintained gender constructs and patriarchal convention, Lady Macbeth taps into the source of her exploitation. From the moment she speaks herself into existence by unsexing herself to her controversial suicide, she capitalizes upon this knowledge to transform her subordination into an affirmation and then subvert it from an omniscient, unchallenged vantage point. By catalyzing a state of social panic, her confounding gender performance introduces a gender-fluid space wherein the "hypothesis of reversal" of phallic power may be achieved (Irigaray 77). Through strategic essentialism of the feminine, mimicry of the masculine, and self-abjection of body and mind, Lady Macbeth usurps power from the phallocratic order, altering collective consciousness and leaving existential panic in her wake. Despite her textual demise, Lady Macbeth lives on through her epistemic progeny—her revolution of socially intelligible gender identities. This new interpretation of Shakespeare's treatment of gender and power relies upon discourse developed by feminist theorists Judith Butler, Hélène Cixous, Luce Irigaray, and Julia Kristeva, as well as post-structuralist theorists Jacques Derrida and Michel Foucault. For centuries of critical responses to "Macbeth," a contemporary analysis which challenges dichotomized views of gender, deconstructs the cultural matrix of intelligibility, and acknowledges—rather than demonizes—female power is long overdue.

52. Voltaire's Candide: Satire and Logic
Presenter(s): Edgar Murcia
Advisor(s): Dr. Lynda Hall and Dr. Myron Yeager

Anyone can attest to the fact that satiric literature possesses the capacity to amuse and delight an audience, but fewer have identified the close relationship between formal argument and satire. My poster seeks to establish that connection. I argue that the relationship between satire and argument is found in a satiric text's capacity to create a fictive landscape which mirrors the real world, a feature of satire which allows an audience to draw an analogy between the events and characters in a text and events and characters which exist in the world. If a character or event in a text is made to seem absurd, then that judgment will reflect onto real people or events which they represent. The second aim of my project is to apply this approach to a particular work of satire, Voltaire's Candide. Candide is famous for its dark humor, flat characters, and comedic portrayals of 18th century philosophers—all of which, I argue, work together to create a formal and valid argument which poses a legitimate challenge to the theories espoused by some 18th century thinkers. More specifically though, my analysis shows that Candide contains two formal arguments, one which takes aim at Leibnizian

optimism and follows a reductio ad absurdum structure and the other which attacks the notion that one can adequately describe the particulars of the world using a coherent and reductive theoretical system.

53. <u>Taking a Stand</u>
Presenter(s): Raha Pirzadeh
Advisor(s): Danika C. Hazen

In today's society, women are still not taken seriously when it comes to the work field. Society stereotypes gender, especially women, and that impacts the way women are looked at. This creative project covers a conversation between two female adults on gender bias in the workplace. The conversation shares an insight into two different lives, one a receptionist for a company and another as a computer programmer at a tech company. The dialogue seeks to bring awareness to gender discrimination, especially to women who still find it difficult to share their opinion and voice in the workspace. As the dialogue progresses, both women make the realization that it is easy to blame society on this matter, but it is up to women to take a stand, and fight for what they believe in. As the author, I used personal experiences to convey my message to my readers. I feel it is important to have gender equality, but also it is important for women to have a strong support system. I personally have been in a position similar to the one of the main character and had to learn the hard way to find my strength and take a stand. Through this project, I hope to empower girls and women to not be afraid to stand up when something is troubling to them.

54. <u>Mind the Gap: Locating Truth in the Space between Language and Meaning through a Critical Analysis of Ivo Andric's Bridge on the Drina</u>
Presenter(s): Tanja Radic
Advisor(s): Dr. Lynda Hall

The Mehmed Paša Sokolović Bridge in Višegrad spans the Drina River and stands as a silent witness to the turbulent history of Eastern Europe, from its construction in the late 16th century to its partial destruction during World War 1. Ivo Andric demonstrates the struggles of living in an area fraught with cultural and religious conflict through the ever-changing relationship between language and meaning, effectively destabilizing meaning and forcing the reader, much like the characters in the book, into a liminal space of identification where language no longer serves meaning through a direct relationship. In order to understand the significance of these shifts in language and meaning, I will examine our current understanding of the relationship between meaning and language. I am positing that our modern understanding of language is shaped by two important philosophical movements: Enlightenment and Postmodernism, for which Descartes and Derrida act as figureheads. I will demonstrate how, while many believe that Derrida's Deconstruction undoes Descartes' notion of a dualistic and discernable reality, on a structural level both operate using the same basic premise, which forces us to see language as a failure rather than as an opportunity. Then, I will construct a theoretical platform for language using the synthesis of Hermeneutics and Semiotics to establish a new, meaningful understanding of language and meaning. Finally, I will apply this theoretical framework to the book, examining how translation complicates this relationship further. My ultimate goal with this project is to demonstrate that while the relationship between language and meaning is

certainly unstable, this should not lead to a nihilistic understanding of language, communication, meaning, and identity. Instead, the instability of language is actually central to the uncovering of meaning, and that an embrace of liminality necessarily leads to the unfolding of endless pathways of meaning.

55. Mock Mock! Who's There? Sexism.
    Presenter(s): Rachel Rinsema
    Advisor(s): Danika Hazen

This creative personal narrative covers the topic of gender and the sexism in the workforce today in society. In high school, I was a member of my school's mock trial team, and this narrative outlines some of the awareness I gained about society and the topic of gender as a whole. Through this narrative, I explain the harsh reality that I realized regarding gender bias in the common activity. This narrative focuses in on the personal story about the activity, Mock Trial and the personal realization of the male dominance in the field of politics and law. The story covers the differing treatment and scoring of males versus females in the activity, as well as the clear gender bias in judging and nomination for awards. Through this narrative, I compare my experience to real-world examples and statistics about gender discrimination in politics and law, which further reveal the sexism in this field, past a high school activity. The real-world examples give context and a greater understanding of the societal application of this story. This work gives insight deep into the core of how even extra-curricular activities, such as mock trial, unintentionally push women back in their position in society, and discourage women from reaching their full potential.

Environmental Science and Policy

56. Are Methylotrophic Substrates Important in Northern Peatland Methane Cycling?
    Presenter(s): Emily Hanna
    Advisor(s): Dr. Cassandra Zalman and Dr. Jason Keller

Peatlands store one-third of the terrestrial soil carbon and release substantial amounts of the greenhouse gas methane. In these wetlands, methane is thought to be produced through two dominant microbial processes: acetoclastic and hydrogenotrophic methanogenesis. However, prior research shows that methane can also be produced from a variety of methylated substrates (i.e., methylotrophic methanogenesis). The process of methylotrophic methanogenesis has been understudied in peatlands but could be important source of methane in these globally significant ecosystems.

In order to determine the importance of methylotrophic methanogenesis in northern peatlands, we added 13C-labelled methylated substrates (methanol, dimethylsulfide, and methylamine) to soils (0-25, 25-50, 50-75, 100-150, 150-200 cm depths) from three different peatlands. Over the course of anaerobic laboratory incubations, we traced the production of 13C-CH4 to quantify the use of the methylated substrates in these soils.

For the first time, we have demonstrated that methylated substrates can be used by peatland methanogens, with methylotrophic methanogenesis occurring in all sites at all depths. Methanol was

the favored methylated substrate and was converted to methane in each site at all depths. Methylamine was used in only one of the peatlands and the importance of this substrate increased with depth. Dimethylsulfide was not converted to methane in any soil during this experiment. Preliminary analysis suggests that methanol contributed up to 10% of the total methane produced at depth, but that the contribution of methylotrophic methanogenesis to overall methane production was minor at surface depths. Ongoing work exploring the concentrations of these methylated substrates in peatlands will help to better describe their importance in methane cycling in northern peatland ecosystems.

57. Blue Carbon - Greenhouse Gas Flux From Coastal California Restoration Projects
Presenter(s): Haley Miller
Advisor(s): Dr. Jason Keller, Dr. Cassandra Zalman, and Glenn Woerndle

Coastal wetlands are incredibly valuable environments due, in part, to their ability to sequester and store carbon over long periods of time. There is a growing interest among coastal managers to capitalize on the carbon storage capacity of these ecosystems, known as "Blue Carbon", to drive restoration and conservation efforts in the context of emerging carbon markets. While wetlands are extremely efficient carbon sinks, they also have the ability to produce and emit greenhouse gasses like methane and nitrous oxide. Previous studies suggest that production and emission of methane from coastal wetland ecosystems are suppressed by the availability of sulfate in high salinity, tidally-influenced systems and that nitrous oxide fluxes are minimal in all but the most eutrophic coastal environments. However, these assumptions are rarely tested on the ground in Blue Carbon ecosystems. Our studies used static chambers to measure greenhouse gas fluxes from two regionally-significant coastal restoration projects. We measured methane and nitrous oxide fluxes from a sediment augmentation project at the Seal Beach National Wildlife Preserve (southern California) and methane fluxes from the South Bay Salt Pond Restoration Project (San Francisco Bay). Our results demonstrate that while methane fluxes were low in both projects, there were "hot spots" of methane flux, including fluxes from high salinity locations. Nitrous oxide emissions from the Seal Beach project were generally minimal. A better understanding of spatial and temporal variability of methane fluxes is necessary to better understand the role that these coastal ecosystems play in emerging carbon markets in California and beyond.

58. The Impact of Drying on Iron Nanoparticle Aggregate Size and Metal(iod) Absorption
Presenter(s): Fernando Silva and Madeline Chew
Advisor(s): Dr. Christopher Kim

California's historic mining legacy has left heavily contaminated waste throughout the state that continues to threaten natural resources and surrounding communities. If untreated, this waste is susceptible to mobilization and can consequently contaminate both surface and subsurface environments with heavy metals. Once transported, metal(iod)s have the potential to contaminate lager water bodies that are downstream of the contamination source. Iron oxyhydroxides are found in conjunction with tailings and are of great interest due to their capacity to retain dissolved metal(loid) ions onto their surface in aqueous environments.

Goethite nanoparticles have the potential to reduce the cost and effort associated with current methods of ground water remediation because of their ability to be implemented in-situ. The capacity to which goethite -FeOOH nanoparticles retain metals, such as Cu(II), onto their surface is dictated by several factors including the aggregation size as well as structural organization. For this current study, the effect of aggregation conditions on Goethite nanoparticles in solution will be observed via the mass reduction of suspension containing -FeOOH nanoparticles proceeded by the adsorption/desorption of Cu(II) through induced ionic conditions. Recent laboratory members have studied both the effect of evaporative and temperature induced aggregation, thus establishing a strong foundation for the current project [1,2]. Understanding how drying affects the agglomerate process is essential for maximizing the nanoparticle's efficacy when implementing it for use in remediation.

Film

59. A Woman's Role of Film: The Celluloid Ceiling
Presenter(s): Samantha C. Lager
Advisor(s): Dr. Jocelyn L. Buckner

What does it take for a woman director to gain footing in a male dominated film industry? According to Gregg Kilday, "Women comprised just 7 percent of all directors working on the top 250 domestic grossing films in 2016" ("Study: Female Filmmakers"). Although female film directors are currently at a record low, women such as Alice Guy Blaché, Lois Weber, and Dorothy Arzner are responsible for pioneering the profession at the beginning of the 20th century (Slide x). Almost a century later, it seems as though female film directors are just now beginning to receive big credit. If females have helped pioneer film directing, why did it take until 2009 for a woman to win the Academy Award for Best Director? Why was Wonder Woman (2017) the film that created more discussion on where female film directors are than any other film directed by a woman? In my lifetime, I have seen successful female film directors such as Sofia Coppola, Kathryn Bigelow (the Best Director winner), and Jane Campion who have revolutionized film directing today. But, where are the others? If female film directors assisted the rise of the film industry, why are they not as equally represented in the director category today? Film directing is a profession that I have always admired, but how can a young female film director progress in this industry? In this thesis, I uncover where the bias of the entertainment industry lies for female film directors by examining four problems they face in Hollywood in order to identify how female film directors are working around the bias in the film industry.

Health Sciences and Kinesiology

60. Ashtanga Yoga Acts to Alter Inflammatory-Associated miRNAs in Saliva
Presenter(s): Trina Killian and Catherine Walsh
Advisor(s): Dr. Marcia Abbott

Obesity is a major health problem, generating a state of chronic inflammation in the body. While it is known that exercise can reduce obesity, it is not known which type of exercise is the most effective. Recent studies have linked yoga to reductions in inflammatory markers. A potential route that yoga acts to reduce inflammation might be through regulation of miRNA expression. MicroRNAs are known to be associated with chronic diseases, and their expression is altered with exercise. However, it is not currently known if yoga regulates miRNAs expression. The purpose of this study is to determine if a single bout of Ashtanga yoga will alter inflammatory-associated miRNA levels in saliva. Female participants, recruited from Ashtanga Yoga Orange County, Costa Mesa, CA, performed their regular Ashtanga yoga practice and saliva was obtained before and after. Small molecule RNAs were extracted, reverse transcribed to cDNA, and real time qPCR was carried out to measure the presence of 84 miRNAs, associated with inflammation, in saliva (n=3). Lipid profiles were measured using a lipid analyzer (n=4). Total cholesterol values between pre-yoga (162mg/dL) and post-yoga (163mg/dL) were unchanged (P>0.05). Likewise, HDL (67.7 mg/dL vs 69.7 mg/dL) and LDL (81.7 mg/dL vs 78.5 mg/dL) concentrations were unaltered following yoga (P>0.05). Of the 84 miRNAs assessed in the saliva (pre-post), 8 were significantly different (P<0.05). Specifically, miR-208b, miR-15b-5p, miR-622, miR-185-5p, miR-184, miR-346 and miR-654-5p were reduced while miR-299-5p was elevated after yoga (P<0.05). Our results indicate that yoga does play a role in the regulation of circulating miRNAs. MiRNAs associated with chronic disease processes, were reduced following a yoga session, supporting the proposition that it is a favorable practice. MiR-299-5p, which is inversely associated with cancer, increased following yoga. While our data reveals that yoga modifies circulating miRNA levels, continued research is required.

61. The Effects of Ashtanga Yoga on Circulating Adipokines
Presenter(s): Catherine Walsh and Trina Killian
Advisor(s): Dr. Marcia Abbott

Obesity is a growing epidemic in society and most interventions are limited in their long-term effectiveness. Yoga is coming to light as an alternative to "traditional" endurance exercise to mediate obesity, especially because yoga intervention studies have reduced attrition rates compared to other exercise types. However, the mechanism by which yoga mediates adiposity is not clear. Adipokines are cytokines secreted by adipocytes, regulate metabolism and are produced with exercise. However, examination of yoga's effect on adipokines has not been done. The purpose of this study was to assess the effects of yoga on saliva concentrations of adipokines. Female participants, age 40±3.3, (n=4) performed a single session of Ashtanga mysore yoga. Saliva samples were collected before and after the yoga session, then analyzed for levels of 54 adipokines using a commercial array. Saliva adipokines were quantified using densitometry analysis with Image J software. Blood glucose and triglyceride (TG) concentrations were measured using a lipid analyzer. Blood glucose was not significantly

(P>0.05) different following yoga (80.3±2.2 mg/dL) from before yoga (79.3±1.8 mg/dL). Blood TG concentration was significantly (P<0.05) reduced by 41% resulting from the yoga session (74.5±8.5 vs 43.8±4.7 mg/dL). Sixteen adipokines were significantly increased (BMP4 233%, FGF19 233%, adiponectin 60%, chimerin 79%, AGP1 156%, HGF 62%, PCSK9 40%, angiopoietin 1 226%, RAGE 101%, angiopoietin 2 95%, RANTES 81%, angiopoietin-like 2 62%, EN-RAGE 80%, BAFF 95%, TIMP1 76% and IL-8 92%) and 3 were significantly reduced (IL-11 38%, IGFBP-6 35% and Resistin 16%) (P<0.05). Our data indicate that Ashtanga yoga acts to reduce blood TG and alters the saliva content of adipokines. Specifically, adipokines associated with increasing metabolic processes (BMP4, FGF19 and adiponectin) were elevated. In summary, a potential pathway by which yoga acts to reduce adiposity may be through mediating circulating adipokine levels.

History

62. Sound Recording: A Noise Revolution
Presenter(s): Gregory Netchaev
Advisor(s): Dr. Jocelyn Buckner

This study is an attempt to establish the role of sound recording devices in the modern world as an outlet for artistic freedom and socio-political change. From the first analog recording device to the digital processors we use today, this technology has allowed for revolutionary change across a spectrum of topics. Data for this research has been collected from newspaper articles and online sources to support the argument that sound recording devices have had an impact on major events around the world and have been used to mold culture through art and technological capabilities. The thesis will look at the beginning era of Thomas Edison's Phonograph from years 1877+ and the various steps that advanced audio playback toward the modern day system of digital processing and distribution. Despite all the technological advances of the 21st century, audio recording devices are here to stay since there is no limit to the capabilities we now have to create and share our art with the world. Award winning records can be produced on airplanes, multi million dollar festivals can be designed and programmed in a taxi, the potential is endless. Through this thesis, I will uncover the gravity of influence that audio recording devices have had in cultivating global change. Sound has continued to be proven one of the most powerful revolutionizing mediums in the world.

Integrated Educational Studies

63. School Librarians: Their Role as Global Educators in the 21st Century
Presenter(s): Darliene Zepeda-Field
Advisor(s): Dr. Quaylan Allen

Purpose: This article presents information that examines how school librarians have the skills and knowledge to produce globally educated students in a K-8 environment during a time when administrators and school districts are eliminating the position of school librarian.
Methodology/Approach: This includes an overview of the job duties of a school librarian in the 21st century as outlined by the California School Library Association (CSLA). Drawing from the qualitative analysis on three school librarians in three different school districts, along with ethnographic observations on class visits to their libraries, this study will provide a framework with which to examine the challenges and current dilemmas caused by changes in the schools and districts.
Findings: There seems to be a shortage of qualified school librarians due to district cutbacks, all while the districts are not facilitating their assets (school librarians) to incorporate global education within their school. Students who participated in the study presented feedback on the curriculum they would like to have available to them to participate in school.
Originality Value: The value of the paper is to present the lack of reform regarding the role of school librarians and how they can utilize their expertise to expose students to activities that help them develop into global, multicultural and technologically competent citizens.

Interdisciplinary

64. The Future of Lighting Technology in Live Entertainment
Presenter(s): Ian James
Advisor(s): Dr. Jocelyn Buckner

My purpose in writing this paper is to inform the reader of the new types of lighting technology that exist today and how the new features of this technology can be utilized by artists to change the way in which the audience perceives the art they are witnessing. My aim is that by the end of this reading you will understand why lighting is an essential aspect in all areas of our lives. I hope that you will have gained an understanding of how the lighting industry has evolved in the last several decades and how it is in constant change and motion. I want to show you some of the new advances in technology that have completely changed my view of how to effectively light a show, event or art installation. To those of you who are in positions which allow you to set budgets and manage equipment rentals and purchases, I hope to convey the significance of using new and state of the art technology to make your event/company stand out from your competition. For the directors and producers in the audience, I aim to show you why it is important to rent your lighting equipment and how that can provide endless benefits to your project or your company.

65. Building and modifying an open-source 3D printer to extrude viable 3D cell cultures.
    Presenter(s): Kathleen Thornsberry
    Advisor(s): Dr. Justin Dressel and Iris Dorn

Additive manufacturing, also known as 3D printing, has developed since its inception to enable the printing of various biological materials with tissue scaffolds. In 2004, an online project began to enable 3D printers to self-replicate using minimal extra materials, known as the RepRap community. The overarching goal of this project is to build an open-source RepRap 3D printer (Mendel90 model) in order to make modifications to the print head to extrude functional cell matrixes. This will be done in part by utilizing the 3D printer on Chapman's campus, consistent with the self-replication model. The first phase of this project was completed this semester, which included extensive research into the method for building the printer as well as possible future directions of this bioprinting project, which includes applications in tissue engineering and drug development. The extruder head was also created as a deliverable, using Chapman's 3D printer to print plastic parts. Learning objectives of this project include developing an understanding of engineering and software development via the process of building a 3D printer from scratch. The ultimate objectives for this project are to build a 3D printer and modify it to print biological materials.

Mathematics

66. The Axiomitization of Classes of Partial Algebras
    Presenter(s): Sarah Alexander and Nadiya Upegui
    Advisor(s): Dr. Peter Jipsen

In this project we focus on effect algebras and other classes of partial algebras closely related to effect algebras with the goal of gaining a further understanding of their structure and how they behave in relation to one another. Effect algebras are relevant in areas such as quantum physics and quantum computing. A set of effects for a physical state S represent yes-no measurements that may be precise or unsharp, and are therefore hard to quantify. This set of effects is the underlying set for an algebraic system that forms an effect algebra. Each algebra that we have studied has certain axioms, or rules, that define how they behave. We have been able to prove that not all of these axioms associated with the classes of algebras that we are studying are independent from one another, and that certain combinations of these axioms imply that additional axioms must be true. By adding these new implied axioms to the definitions of our algebras, we are able to see that commutativity, consistency, and orthocomplementation define the differences between these classes of algebras. We prove which classes of algebras are subsets of other classes of algebras, therefore showing how all of these algebras are related to one another.

67. Effect Algebras as Total Involutive Residuated Partially-Ordered Monoids
    Presenter(s): Nadiya Upegui and Sarah Alexander
    Advisor(s): Dr. Peter Jipsen

Our research is focused in connecting the lesser-understood area of partial algebras with the well-studied area of total algebras. To do this, we use different types of totalizations, which are methods of creating a new algebra that preserves the structure of the partial algebra we are working with while

removing the partiality of the original algebra (that is, ensuring the new algebra is total). By relating partial algebras to total algebras, we are able to use well known techniques from universal algebra and apply them to the partial algebras we are studying. This allows for a deeper understanding of the structure and properties of partial algebras, as well as resulting in an easier way of handling partiality, especially for computational tools. Specifically, we cover no-point, one-point and two-point totalizations of effect algebras, a partial algebra commonly used in Physics. When applying these various totalizations, we came to three important results: the no-point totalization of a linearly-ordered effect algebra is an MV-algebra, the one-point totalization of a linearly-ordered effect algebra is an MV-algebra, and the two-point totalization of an effect algebra is an involutive, residuated po-monoid. As our research continues, we aim to expand our results to generalized pseudo-effect algebras and their connection with total, involutive structures as well.

68. Productivity
Presenter(s): Colette Noghreian
Advisor(s): Dr. Sandy Lopez Najera

As technology becomes more prominent in society, it is crucial to investigate its effect on day to day life. The purpose of this study is to determine how the amount of time spent on iPhone applications affects how productive students feel in the span of one week. Results are tested through a survey which first determines general information about the student, and then guides students to navigate their phone settings and record the battery usage of the top three applications which use up the most battery. It is hypothesized that productivity decreases as battery usage increases due to the substantial amount of time spent on applications such as social media or other media platforms.

Music

69. Western People Funny: Comparative Character Treatments Between White Women and Women of Color in the Golden Era of Musicals
Presenter(s): Emilia Bartelheim
Advisor(s): Dr. Jessica Sternfeld

My thesis topic explores how the issue of race is dealt with in the Golden Era of musical theatre, more specifically in regards to the treatment and characterization of women. I will do so by first looking at George and Ira Gershwin's' Porgy and Bess, and analyze their authority to set a piece they are so socially distanced from--they are white Jewish men from New York writing about impoverished black people in the deep, deep South. While technically an opera, it lives in the same vein as musical theatre and very clearly demonstrates a precedent that carries on in future decades. I'll then look at the musicals South Pacific and The King and I, both by the duo Rodgers and Hammerstein, and compare the character treatments of white women versus women of color--for example, how their language differs between songs, the specific methods in their song composition, and how their individual plots resolve. Additionally I'll talk about the reasons behind writing political messages in musical theatre. While these musicals are seen as liberal for their time, should they still be seen as such in modern day? To illustrate the importance of the topic, as musical theatre can be seen as a niche interest, I'll

compare musical theatre as a medium to other forms of entertainment, like film, that are currently being criticized for their lack of diversity. If musical theatre is to thrive as a form of entertainment that appeals to a larger audience, should it follow the same idea, or stick to its classic roots?

70. <u>Film Music: What Makes a Score Stick?</u>
Presenter(s): Michael Boggs
Advisor(s): Dr. Jessica Sternfeld

What exactly is it about film music that makes certain scores so catchy and successful? Film music has become vital to the product and art form that is cinema. Music conveys a variety of factors in any given film, including setting, mood, and point of view. In this paper, five films that are iconic for their music composition are examined to see how each film score executes it job and to objectively assess how it affects the listener. In particular, I examine how the theme to The Pink Panther sets the mood and the tone of the film by uncannily combining elements of suspense with humor. In The Good the Bad and the Ugly, the theme is evocative of the Wild West setting. In Star Wars, the music is key to setting the mood and for creating emotion that connects and pulls in the audience to an otherwise alien setting. In Guy Ritchie's Sherlock Holmes, I explore how the music the music establishes setting and mood. The Social Network is an excellent example of how music conveys the protagonist's (Mark's) point of view and outlook. Film music has not only become a vital part of cinema, but has also transcended genre and now pervades our culture. Few people do NOT know the theme to Jaws, or The Pink Panther. With that in mind, it is of interest to know why certain themes stick with us, while others do not. What makes these themes more "special" than others? The themes of these films are completely different from each other musically, but upon examination, each plays a vital role in characterizing the films they support.

71. <u>Piracy, Policy, and Pandora: Outdated Copyright in a Digital Music World</u>
Presenter(s): Stephanie Caress
Advisor(s): Dr. Jessica Sternfeld

This paper examines how current copyright laws and digital distribution practices can be improved for both creators and consumers of music. The laws that govern our digital atmosphere, and thus a large portion of music distribution, are outdated and revenue is lost in this flawed system. To create a comprehensive picture and establish the scope of this problem, I start by outlining the process a song goes through from when it is written to when it is in the hands, or rather ears, of listeners. From here, problems arise that hinder the creator's compensation collection and the consumer's listening habits, most notably from the loss of information and piracy. Additionally, copyright laws both combat and contribute to these issues. This paper examines the Digital Millennium Copyright Act passed in 1998 and recent revisions because the guidelines discussed in these acts for internet providers and websites determines how they then handle the sale of music. Many scholars have commented on the inefficiencies of our current legal state, but I seek to connect these problems to a variety researched solutions. I detail how emerging technologies, such as blockchain, and changes in policy, could improve conditions. In this paper, I seek to educate readers on the intricacies of copyright, highlight pitfalls of our modern structure, and relate these problems to unfolding solutions.

72. Female Representation in the Music Industry
Presenter(s): Elisabeth Cooper
Advisor(s): Danika Hazen

My research focuses on the struggles that females have in the music industry. As a girl that has always played an instrument I have been dealt with this struggle weather I am playing, guitar, trumpet, or violin. With 12 years of experience playing music, I have noticed one instrument is much worse with gender roles than the others, drums. In my research I explore why this stigma is so prevalent when playing drums compared to my experience with other instruments. My research draws from personal experience, comments made about other girl drummers in public forums, and the experiences other female drummers.

73. The Revolutionary, the Connoisseur, and the Rocket Man: Music under Three North Korean Leaders
Presenter(s): Taylor Kunkel
Advisor(s): Dr. Jessica Sternfeld

Time and time again, music has been noted for its power in political settings – and in the North Korean state, this is certainly no exception. Since the split of the Korean Peninsula in 1945, the North has been subjected to totalitarian rule under the Kim Dynasty. Music in particular has played an extremely prominent role in the formation and maintenance of North Korea's regime and its dynastic legacy; my paper explores this role through an analysis of the significant musical elements, theories, and strategies used by each Kim dictator. I begin with a brief historical background of our first and founding revolutionary of a leader, Kim Il-Sung, analyzing his specific use of music to establish a national identity for the state. I then move onto Kim Jong-Il and his undeniable passion for the artistic realm, describing his hands-on approach with the arts; arts which he also used to solidify his father's legacy. Finally, I discuss Kim Jong-Un and his modern-day use of music to maintain power. In this paper, I also discuss how said artistic installations have affected the North Korean peoples – the direct recipients of this despotic ruling. I then speculate what this role of music as a political tool might mean for the North Korean state and its people, both structurally and socially, moving forward.

74. From Pink to Pink Floyd: The Effect of Technical Advances Used in Live Musical Performances
Presenter(s): Madisyn Moynihan
Advisor(s): Dr. Jocelyn Buckner

Musical concerts and festivals have increasingly become a central part of popular culture across the globe. The recent advances in technology in the past decade, ranging from LED lights to high-resolution projection monitors, not only allow listening to music to be more accessible and convenient, but also add to the experience of live performances. Many musical artists and concert performers today use various techniques to utilize these technological advances and manipulate their performance to a certain direction. Regardless of the musical genre, artists and bands use staging, lights and lasers, projections, and other special effects to evoke a specific reaction from the audience. This may involve getting a point of view across, sparking an emotional reaction, or simply increasing the visual beauty of the performance to supplement the vocals. In this thesis, I examine a selection

of concert artists and their use of new forms of technology in their performances in order to uncover different storytelling methods and their purpose for doing so. I also research several reviews and audience reactions to these methods used in the artists' past and present in order to prove the affect and power that technical elements have in regards to art and creativity. Three musical performers that provide an excellent example of purposeful use of technical advances in their performances include Panic! at the Disco, Pink, and Pink Floyd. All three of these popular artists and music groups are known for their spectacular visual effects in their shows. However, their objectives in using those specific elements tell the audience something about who they are as people, what they believe, what they went through, and what they want the audience to learn. This ranges from highly emotional to strictly political performances. Many advances in technology are being made and several big-name artists and producers are wealthy enough to afford to incorporate the new technology in their concerts. This greatly enhances their performance both visually and audibly.

75. Under the Spotlight: Operatic Prodigies in Reality Competition Shows
Presenter(s): Margot Schlanger
Advisor(s): Dr. Jessica Sternfeld

Reality competition shows on television have boomed into a massive cultural phenomenon in today's society. We cry when the front runner gets eliminated and we rejoice when our favorites win. Participants of all ages appear on T.V. and show a massive range of talents to "wow" the crowd. One group of participants on these shows has been especially controversial. From Charlotte Church to Jackie Evancho, child operatic prodigies have been taking the spotlight, and stunning the crowd. These child opera stars create strong reactions from the audiences: members of the opera community have a strong negative reaction and think what the children are doing is wrong, while fans have a strong positive reaction and think these stars are talented and incredible. Why is it that TV audience embrace these child stars, while the opera community frowns upon them? In this paper I will identify and analyze the wrong vocal technique seen in operatic child prodigies on reality competitive shows, and discuss the negative affect these techniques have on a developing opera singer. I will be looking into the vocal technique as described by vocal pedagogists as healthy and non-damaging, and will compare those techniques to what these prodigies show in live performances. I will also discuss how these prodigies are seen in the eyes of both the the professional vocal world and the rest of the world, and look into why they are a phenomenon in today's society.

76. Video Killed the Radio Star: An Analysis on the Decline in Popularity of Classical Music
Presenter(s): Malinda Yuhas
Advisor(s): Dr. Jessica Sternfeld

With rapid advances in modern technology and the lack of funding in musical education across the United States, it has been widely accepted that traditional Western classical music is dying. Evidence of shifting preferences in musical genres amongst younger generations and a widening divide between "art" and "pop" music prove classical music's growing irrelevance in this modern age. To justify this growing issue, Milton Babbit's article, Who Cares If You Listen? encouraged the alienation of modern audiences from contemporary composers, believing a-tonal music to be made by "specialists" for "specialists". Others, like the audience agency in London, who published the National

Classical Music Audiences, analyze consumer preferences through financial and statistical evidence. As these two examples show, many have examined the decline in popularity through either the lens of sociological issues or that of marketing, yet there has been little research that justifies sociological assumptions through a business perspective. In order to administer effective solutions to the growing concern of classical music longevity this paper aims to do away with the stereotype of the "uneducated masses". The author believes that it is not the audience that is the issue, but the slow progression of the seller (i.e. musician and composer) to formulate a valuable service to a diverse market. Rather than turning a blind eye to technological advances and stubbornly preferring to remain "traditional", it would behoove the orchestra to create an accessible environment through web streaming, adding business-oriented board members, and redefining the overall experience of concert going.

Peace Studies

77. Gender and War
Presenter(s): Jasmine Bucago
Advisor(s): Dr. Asiya Daud

War has numerous casualties, one of which too often goes overlooked. Repeatedly, the forgotten casualties of war are the victims of sexual violence. Most of the time these victims are women and girls ranging from as young as 10 to as old as 70, who are subjected to sexual assault and rape at the hands of various military regimes. The purpose of this project is not only to study the physical and psychological trauma that ensues at the hands of the military onto victims, which causes suffering throughout, during and after instances of sexual attacks, but also to show the effects it has on peace building after conflict. This will be measured through case studies and field research, starting with cases from the Bosnian War (1992-1993) all the way until the ongoing Syrian Civil War. In addition, I will be collaborating with a member from the United Nations Population Fund to gather information about these cases. Research on this topic is important because it will show how women can become vulnerable in many societies and military regimes because of the important role they play in constructing and maintaining communities.

78. Homeless in Orange County: Riverbed Research 2017
Presenter(s): Cade Gallal
Advisor(s): Dr. Lisa Leitz

Around February 2017, homelessness on the Santa Ana River Trail (SART) became a more serious issue than ever before. Over 600 homeless persons were, and are, illegally living along the riverbed as per the City of Anaheim's anti-camping ordinance, which prohibits people from camping in public areas and storing personal property in public areas, thus, making homeless persons vulnerable to criminalization. As a result of the enforcement of this law, the SART homeless population was evicted from one side of the riverbed, and moved to the other. Much discussion and research has been done on how SART homelessness is a problem, and how there ought to be a solution, but there is a lack of research in regard to how powerholders and activists are responding to the SART evictions in February

2017. Therefore, my research entails a multi-methodological study that analyzes public meetings and qualitative interviews through describing how activists and powerholders are responding to the February 2017 SART homelessness evictions.

79. <u>Caught in the Crossfire; Intergroup Conflict Theory in the Context of Homeless Advocacy and Powerholders</u>
Presenter(s): Atty McLellan, Beck Wilson, Bennett Tuleja, and Cade Gallal
Advisor(s): Dr. Lisa Leitz

While the stereotyping of homeless has been the topic of numerous studies, stereotyping theory has rarely been used to examine the actions of the advocates and policymakers that surround the issue of homelessness. This study not only fills this gap, but even examines how stereotyping impacts advocates' plans to mobilize and their overall goals. In 2017, homelessness became the top concern for residents in Orange County. At the start of February 2017, the Orange County government began a public works project that required the homeless people who were living in the Santa Ana riverbed to evacuate the area and relocate somewhere else. Since then, the amount of action taken by both policymakers and advocacy groups has increased over the following months. To examine these actions I used content analysis of public meetings and individual interviews to delve into the advocate's perception of the powerholders, themselves, and the homeless population they were attempting to serve. I found that advocates negatively stereotyped those who they perceived to be their 'opponents'. Our research suggests that advocates' negative view of powerholder actions lead to higher levels of suspicion, distrust, and rejection of said actions. Additionally, as stereotyping theory suggests, advocates' use of stereotypes increases the cohesion in the activist group and promotes their own version of solutions for homelessness, painting themselves as the morally superior party in relation to others.

80. <u>Evaluating the Progress of Orange County's 10-Year Plan to End Homelessness</u>
Presenter(s): Bennett Tuleja
Advisor(s): Dr. Lisa Leitz

In 2012, Orange County assembled a Commission of 15 members to tackle the task of ending homelessness. They wrote the Orange County 10-Year Plan to End Homelessness, which sets benchmarks, establishes strategies both broad and specific, and provides a general overview of the steps needed to eradicate homelessness across Orange County by 2022. The goal of this research is to evaluate the 10-Year Plan, by comparing it to any progress that the Commission may have been made. Thus, by comparing these, we can see how effective Orange County has been in reaching this goal and what changes had to be made to the plan along the way. In order to gain this insight, I conducted a detailed analysis of the document and contrasted it with progress reports that various implementation groups, which are responsible for key tasks that must be carried out, as well as reports on progress noted in City Council meetings held by cities in the surrounding areas. For the information on Anaheim, Orange, and Santa Ana's City Council meetings, I draw on additional research collected by a research team I worked with to analyze the issue of homelessness in Orange County. Currently in the process of compiling my final evaluation, I anticipate Orange County has fallen behind the scheduled pace of its proposed 10-Year Plan.

81. **The Duality of Religion: How Sacred Texts Create Opportunity for Conflict and Mediation**
Presenter(s): Shreya Sheth, Kamaile Patton, Noa Orvis, Bryce Kauffman, and Maeve Mallers
Advisor(s): Dr. Asiya Daud

The purpose of this research is to examine how interpretations of religious texts can lead to conflict. Due to the various interpretations of sacred texts, religion has been a source of both conflict and mediation as shown in past historical events, as well as in events occurring in modern day. The ways in which religion can manifest itself as a source of conflict is largely due to the misinterpretation of naturally peaceful texts. The intended message of religious texts becomes skewed with the growing number of people who attempt to interpret its meaning and apply it to their own motives and desires. Individuals have misconstrued the meaning of sacred religious texts for nationalistic or geopolitical ambitions. Through content analysis, this proposed paper will examine passages of sacred texts such as the Bible, Qu'ran, and the Torah to demonstrate the role that these texts play in many violent and nonviolent conflicts. It will also investigate the generally unknown ways in which religions, thought to be conflict oriented, are more centered on peace than is typically assumed. The case study of the Crusades, a series of holy wars, its motivations and violent tactics employed to carry out Christian goals will be examined. We find that while sacred texts were interpreted by the Church to legitimize the Crusades as a "holy war," there were also ulterior geopolitical ambitions. More examples will be found in the religion of Islam, as conflicts between various sects are discussed, in addition to the use of Islamic texts as a form of legal mediation. Judaism is another religion that this paper will address in terms of how conflicts arose from events such as the birth of Hasidim and how the religion strongly encourages its parties to settle disputes through mediation. Ultimately, this paper will argue for the duality of religion and how its multifaceted nature creates opportunity for both conflict and mediation.

Philosophy

82. **Strategies for eliminating conflict between epistemic and ethical norms in forbidden base rate cases**
Presenter(s): Edgar Murcia
Advisor(s): Dr Michael Pace

Several philosophers have addressed the apparent inconsistency between our norms of rationality and our ethical norms in cases involving forbidden base rates. In this paper I offer five solutions which I claim eliminate the conflict between our norms of rationality and ethical commitments in cases involving forbidden base rates. I take the first four of the solutions which I put forth to be inadequate and, in the course of positing the fifth solution, argue that a particular form of pragmatic encroachment based on evidentialism, if true, can dissolve the conflict between our norms of rationality and ethical commitments in forbidden base rate cases.

Physics

83. Qhord: Music, Visualization, and Playing Quantum Mechanics
Presenter(s): Aaron Grisez and Michael Seaman
Advisor(s): Dr. Justin Dressel

The Qhord Project's purpose is to promote playful curiosity about science (specifically among non-scientists), to foster science literacy in a wide demographic, and to advocate for the adoption of the STEAM (Science, Technology, Engineering, Arts, and Mathematics) model of education in the American education system and globally. Here, we present our flagship development: a mobile application which lets users interact with an accurate quantum mechanical simulation through a musical interface. We explore the issues surrounding the inaccessibility to quantum physics and offer viable solutions to generate more public interaction with science experts.

84. Generation of Twisted Light Beams Using a Digital Micromirror Device
Presenter(s): William Parker
Advisor(s): Dr. Jerry LaRue

Twisted light beams are a relatively recent development in the field of quantum optics. In 1992, Allen et. alumn showed that laser light with a Laguerre-Gaussian amplitude distribution has well-defined orbital angular momentum. There are numerous applications for twisted light, including optical tweezing, optical communications, and investigations into the interactions between photons and matter. High-dimensional data transmission using a twisted light beam has been shown to drastically increase our ability to transmit data, through free space, at a fast rate. In 2012, researchers at the University of Southern California transmitted data at a rate of 2.5 terabits per second, across a distance of roughly 1km. Mirhosseini (2014) showed a similar result and also demonstrated the effectiveness of this type of data transmission for quantum key distribution, as it is highly resilient against eavesdropping attacks. In addition to having direct applications in communications, twisted light is fundamentally interesting. For one, twisted light itself is a quantum system that is relatively easy to study. Also, the interaction between light and matter has long been an interesting field of study, in some ways contributing to the very development of quantum mechanics. The extra degrees of freedom introduced by twisting light provide a new richness to the study of light-matter interactions. In order to study twisted light, a few methods for its generation have been proposed and proven to work. However, the field is still missing a method that is small, robust, cost-effective, efficient, and also versatile enough to generate any combination of light beams on demand. The closest is Mirhosseini's method, in which he used a single Digital Micromirror Device as a binary diffraction grating, which transforms an incident plane wave into twisted light. I have replicated a version of this set-up and am working towards subtle improvements, including higher efficiency, finding the limits of the capabilities of such a set-up, and modifications for use with a femtosecond laser.

Psychology

85. The Effectiveness of Animal Assisted Therapy for Traumatized Children
Presenter(s): Adina Corke
Advisor(s): Dr. Steven Schandler

Animal-assisted therapy (AAT) is a form of therapy used in conjunction with other therapies to aid in the recovery process for patients suffering from physical or psychological ailments. More recently, AAT has been applied to situations involving traumatized individuals such as the use of equine facilitated therapy to treat children who have been sexually abused. This research compared the effectiveness of AAT when used in conjunction with other therapies to the effectiveness of other types of adjunct therapies combined with therapies commonly used to treat children who have been traumatized. The aim of this study was to understand the effectiveness of AAT with traumatized children when used in conjunction with other therapies. The recent literature reviewed showed that AAT is an effective adjunct therapy, but no more effective than other adjunct therapies. Limitations of this study included a lack of biological evidence and few research studies that focused on AAT as a treatment for traumatized children. Further research is needed to test the short and long-term effectiveness of AAT.

86. Detectability of Cultural Markers of Sexual Orientation
Presenter(s): Joanna Dare
Advisor(s): Dr. David Frederick

People actively advertise core aspects of their identities and their beliefs to the world through their choices of clothing, the way they walk, their hairstyles, and the jewelry and symbols they wear. This practice of marking membership extends across many social groups, including the lesbian community. Gay women use such markers in order to be recognized as a part of the in-group, and to develop nonverbal signs so as to not risk societal disapproval (Krakauer & Rose, 2002). Systematic research on the ways that gay women signal their identity is sparse, so this project focuses on cultural markers gay women employ to convey identity, as well as to investigate if these markers reliably increase recognition. Study 1 was conducted as a focus group study in which a list of reliable markers was generated by seventeen lesbian women, and were used to create a series of stimuli. Study 2 was conducted in order to test whether these markers accurately influence perception of sexual orientation. Heterosexual women and lesbian women were recruited to be photographed in neutral dress and then in different combinations of markers. Participants rated the extent to which they believed the person to be lesbian or heterosexual, and how certain they were of their ratings. There was an effect of marker presence on perception, as well as an effect of sexual orientation. Participants were more likely to classify lesbian women as lesbian even when no markers were present. The findings of this study provide an indication to what extent lesbian markers are noticeable to mainstream culture, along with how gay women use fashion and body language to embed themselves in the subculture, and the extent to which these act as effective signals of identity.

87. <u>Negative Inspiration</u>
Presenter(s): Dara Franceschi
Advisor(s): Diana Nguyen

Research shows that there are many different aspects of inspiration. When discussing inspiration, it is usually associated with a positive event; however, this is not always the case. As inspiration is seen as being something to create enough emotion which causes action or thought, it can be negative. In addition, negative inspiration can even be more inspirational than positive inspiration because it pushes us and causes us to become even more determined to act out and make a change. I would like to explore how negative experiences can influence someone to flourish rather than to fall in the face of adversity, and why some people progress with misfortune rather than step away from impeding obstacles. I hope that through research, I can learn why some people use negative events to inspire them to make a change, and why some individuals fall down because of outside occurrences. More specifically, I think I want to research the different types of negative obstacles that can impact someone's life through surveys and polls. There are many different topics that arise when dealing with negative inspiration. I was hoping to explore a few different kinds of negative situations, and compare each situation as it happens to a specific person, and as it happens to someone close to them. Death through accidents, a terminal disease, and getting fired from a job are all examples of difficult situations that can be compared to better understand how certain people rise up to the occasion, and how certain people fall down and give up. To me, I believe individuals will use tragic events in order to become stronger. I believe the purpose is to create awareness of negative inspiration, and how individuals can overcome a harsh reality by becoming inspired in order to be greater.

88. <u>Cohabitation and Marital Instability</u>
Presenter(s): Sabrina Garrido
Advisor(s): Dr. Steven Schandler

One key factor that has been associated with marital instability is whether or not the couple cohabits before they are married. Cohabitation is when an unmarried heterosexual couple lives together. Marital instability can be general disagreements, serious quarrels, and physical aggression. This research examined the difference in marital stability between couples who cohabited before marriage and couples who did not. It was hypothesized that if two adults cohabit before marriage, then they will experience more marital instability than two adults who do not cohabit before marriage. Selection factors can lead to instability in those who cohabit such as income, education, religion, employment status, parenthood. This study reviewed and evaluated current literature to test this hypothesis. The research yielded mixed results. In the studies of couples who did and did not cohabit before marriage, it was found that those who cohabited had greater marital instability if they were not engaged or did not have plans for engagement. Those who cohabited before marriage and were engaged or planned to be had marital stability similar to those who did not live together before marriage. Further research is needed to directly examine why couples who cohabit with no future plans experience greater marital instability.

89. Beyond the Body: Measuring the Effect of Yoga on Body Image in Women
  Presenter(s): Chloe Horner
  Advisor(s): Dr. Connie Shears

Body image distress, disturbance, and dysmorphia is a highly gendered issue in modern psychopathology. Despite its prevalence throughout the media, specific interventions to combat and prevent negative body image in women has not yielded significant or lasting success. A recent meta-analysis of over 62 body image intervention techniques posited that stand-alone interventions are not significantly effective for body image improvement (Alleva et al., 2015). It is noted that mindfulness based interventions have shown promise in the realm of body image improvement, despite lack of empirical attention. Yoga is one such intervention that combines two known intervention methods, physical activity and mindfulness. The present study seeks to investigate yoga as a potential preventative treatment and intervention to address the body image issue in women. An extensive review of current literature and existing body image measures resulted in the development of a novel scale used to measure the effect of yoga versus other forms of physical activity on body image in women. Preliminary results suggest the scale's efficacy, as well as potential for yoga as an effective body image intervention.

90. Inferences From Negative Emotional Language: Weird
  Presenter(s): Lucie Jerome, Kelsey Leavy, Samira Amirazizi, and Hye Rynn Lee
  Advisor(s): Dr. Connie Shears

When you listen to a friend describing their loss of a loved one, do you form causal inferences – that connection of implied information which supports comprehension – in the same manner as when you listen to a friend describing their hiccups during presentation? Sympathy and awkward are weird valences (Sauter, 2010) which may be categorized as negative, but not always (Shears, 2017). If emotional language supports causal inferences, then readers should be slower and less accurate to inference targets following inference supporting relative to control sentences. Readers made key press responses to target words that were in stories that conveyed sympathy, pride, regret, resentment, boredom, or awkwardness and to targets that were not in the stories, but related to inferred information. Valence significantly interacted with both sentence and target type, indicating readers are more likely to form causal inferences if the valence is not awkwardness. Individual perceptions of these emotions can affect the inference process.

91. Effects of Restrained Eating on Episodic Memory and Implications for Homeostatic Appetite Regulation
  Presenter(s): Morgan Kindel
  Advisor(s): Dr. Jessica Walker

Recent studies in the fields of Psychology and Neuroscience suggest a relationship between episodic memory and appetite regulation. A majority of these studies have used BMI as an important variable in the relationship, and have found mild episodic memory deficits to be more likely in individuals with higher BMI's. The goal of this research was to determine whether restrained disordered eating, regardless of BMI, influenced episodic memory and appetite regulation. Initially, we predicted that

individuals showing dietary restraint would show signs of a stronger episodic memory, and therefore would have weaker hunger cues and stronger satiety cues. We found that restrained eaters had a significantly worse episodic memory than the control group. Our findings indicate that there may be other cognitive, behavioral, or physiological factors that are capable of influencing episodic memory deficits besides BMI.

92. The Effect of Media Images on Body Dissatisfaction and Drive for Muscularity on Heterosexual Men
Presenter(s): Elizabeth Rentko and Abigail Carrington
Advisor(s): Dr. David Frederick

Upward social comparison is a presumed cause of negative body image, but experimental studies examining effects of media exposure on men's body dissatisfaction have produced mixed results. We assessed the effects of media on body satisfaction and concerns over muscularity in men. We conducted a between subjects experiment in which 441 men were exposed to images of toned models, bulky models, or images of abstract art (control condition). Participants were then completed validated measures of body image: Body Image States Scale, Appearance Evaluation Scale, Drive for Muscularity Scale (modified to be a "state" scale), Drive for Size scale and Perceived Effects of Media Exposure Scale. On the PEMES, many men reported negative effects of seeing shirtless models compared to men who saw paintings. On the standard body image scales, men who saw models reported lower state body image. There was no main effect of models vs. paintings on appearance evaluation or attitudes about muscularity, but image type did interact with social comparison tendencies: men who engaged in more social comparison were more negatively impacted by the models than by the paintings. This study provides evidence that media exposures have a detectable and systematic effect on how men feel about their bodies, particularly their feelings about their muscularity, highlighting the role that sociocultural factors play in shaping men's body image.

Religious Studies

93. Greek Orthodox Christians in the Cyprus Independence Movement
Presenter(s): Brittney Souza
Advisor(s): Dr. Julye Bidmead

Successful social movements cannot be accomplished solely through politicians but must also be achieved at the grassroots level between civilians. Religious communities and leaders especially have the power to motivate citizens of a country to reach higher than their national duty to include the wants and needs of the faith-based group. Today the territorial battle over Cyprus is ongoing with unsuccessful peace talks occurring every so often between the Turkish and Greek governments. On the ground, the Greek and Turkish Cypriots are separated by a Green Line or UN buffer zone in the capital city of Nicosia with limited interaction and increased demonization on both sides. Before the current conflict the island was controlled by Great Britain with a mixed populations of Greeks, Turks, and expat British. In 1962, the Greek Orthodox Christian community in Cyprus organized and became instrumental in the independence movement from the British resulting in autonomy. Through digital

archives of the independence movement, I analyze the tactics and strategies implemented by the religious leaders and congregation members to achieve their ultimate goal of sovereignty. While the Greek Orthodox Christian community were leaders in the organization of a successful movement, I also investigate the minority Sunni Muslim role in the social movement. While this conflict is not inherently religious, religious communities hold people power geared with ideology and a communal identity. Reflecting on the organizational power of the people and motivations is helpful in analyzing the current Cyprus conflict with the hope of a peace deal.

Sociology

94. An Ethnographic Exploration of Pokémon GO
  Presenter(s): Ketzia Abramson
  Advisor(s): Dr. Stephanie Takaragawa

The mobile app game, "Pokémon GO" became a worldwide phenomenon immediately following its initial release in the summer of 2016. Now, more than a year later, despite its fall from social domination and decline in popularity, POGO is still at the forefront for better understanding the future of communication and socialization in today's ever growing digital age. This ethnographic study, aided by field research, observations, and literature review of both the app itself as well as the 'Poké-verse,' provides an in-depth analysis of how and why a mobile gaming app that utilizes no new forms of technology (augmented reality combined with global positioning systems) has become one of the most crucial steps in understanding the future of human interaction. Social media is known for simultaneously being able to connect people in ways never conceived imaginable, while also pushing people further apart. POGO flips this notion by having no multiplayer game interface, and as a result becomes a buffer so that people are able to use their phones as both a screen to hide behind, but also as a window with which to find and reach out to other players. The strength of the thriving POGO community ultimately reinforces findings to demonstrate that there is a considerable amount that researchers and social scientists alike can learn from the mobile game which was dismissed by the mass culture as purely a fad. The power of child-like nostalgia mixed with an innovative gamer interface has allowed for players to take a simple gaming concept and develop it into its own community with its own culture. Pokémon may be perceived as a juvenile game, but Pokémon GO is the prime innovation to represent how to successfully and effectively connect the real world to online experiences for social interaction.

Software Engineering

95. Employer Applicant Trawler
  Presenter(s): Samy Achour, Dylan Davis, Christina Berardi, and Paul Harnack
  Advisor(s): Dr. Michael Fahy

Employers often trawl applicants' social media presences for objectionable behavior. We are creating a business facing application that streamlines the process, combining API data from LinkedIn with that of Facebook and cross referencing them. The difficulty comes down in aligning user profiles with

different sets of attributes. For example, given an arbitrary applicant the LinkedIn API might give current city, university, and work history but Facebook might just have the current city and a single item in work history. Being able to match these values and pinpoint specific profiles will take some time and a finely tuned algorithm. We plan to have a solution that will cover at least 80% of the cases, given that certain users don't have a social media presence or have obfuscated their account details (another issue, applicants changing their Facebook names). This means that for 10 given searches at least 8 queries will return results containing the correct user profile. The final product will have a web-based UI that displays the search results using python to make the API calls and process the data. The search results will display the top five closest results that match the search. Relevant research includes the field of information retrieval.

96. Tic Tac Toe Tournament Networking
Presenter(s): Thomas Madden, Dillon Tidgewell, and Maika Fujii
Advisor(s): Dr. Michael Fahy

Can a Tic Tac Toe game be developed which allows for multiple games to be played on the same server, while on different sockets; and if so, how can this be done maintaining principles of reliability? As a team, we plan to build a Tic-Tac-Toe game that utilizes the networking concept of TCP socket connections to allow players to connect via the Internet. By housing an ArrayList of TCP Socket connections, a main GameServer will randomly pair users up and have them play a game of Tic Tac Toe. The game will not begin until they are all ready to play, so that players can engage in a tournament style competition to see who is the best of everyone involved. Users will interact via a GUI that we build. The project will be written in Java. In conclusion, by creating this Tic Tac Toe multiplayer game, our group aims to expand our own personal horizons when it comes to how TCP connections are made. By allowing for multiple games to be played on the same network, but using different sockets, our group will give users the ability to compete to be the best Tic Tac Toe player on the Wi-Fi network. By developing this game, our group plans to learn more about the fundamentals of networking and learn how to utilize those TCP connections in a reliable way, validating input however necessary and allowing for the user to set their own preferences in our GUI system as well.

Theatre

97. The Powerful Potential of Live Storytelling in the Digital Era
Presenter(s): Charlotte Anderson
Advisor(s): Dr. Jocelyn Buckner

Live storytelling is one of, if not the most, powerful tool for conveying an idea or message. There is no greater medium for instilling empathy, understanding and inspiring action in an audience. Live forms of storytelling are reliant on community and the experience of sharing with others, yet in this day and age of increased digital isolation we are no longer participating with stories in the same way. The channels through which we access storytelling are becoming more convenient and accessible given rapid technological advancements, but does the medium make a difference if the content is the same? This paper will be examining storytelling, its power and its potential, in the technological era. It will

argue that while we have become rather engrossed and isolated by media, the digital age does not hinder but actually benefits live in-person events. Can listening to a podcast, watching a live broadcast of an opera, or seeing a concert, arouse the same reactions that a shared live experience can? Does combining theatre with new technologies detract from the experience or expand it? There is nothing like the seeming spontaneity and thrill or live performance, but could watching the broadcast of a live show inspire the same empathy? Or perhaps it is the community of an audience or crowd that makes live storytelling to profound. This paper will attempt to answer these questions and figure how the primitive tradition of storytelling interacts with the 21st century.

98. The Contemporary Native Voice in Theatre: A look into the climate of Native representation and the opportunity for Native representation in the Theatre today through "The Tempest"
Presenter(s): Reid Barraza
Advisor(s): Dr. Jocelyn Buckner

In my Research Project I explore Native American themes in William Shakespeare's play "The Tempest" and conduct dramaturgical research, including the investigation of how contemporary Native Americans express their relationship with their heritage, to fuel the creation of an adaptation of "The Tempest" which modernizes the play's commentary on Native people's self-perceptions and their relationships with non-Native people. While I interact with Native themes in "The Tempest" and plan my adaptation, I facilitate the process of understanding how "The Tempest"'s characters and events have historically represented the experience of Native Americans and analyze the canon of contemporary Native American story-telling, including plays by William S. Yellow Robe (Assiniboine) and the Spiderwoman theatre company and new Native myths, to show how "The Tempest" relates to the voice of the Contemporary Native. By the end of my project, I create the bone structure for a play that I plan to devise with other Native artists in order to encourage representation of the contemporary Native voice in Theatre and to initiate a movement towards Native unity and cultural revival. Throughout my project I also reflect on my personal experience as a Yaqui descendent to support the honesty of "The Tempest"'s portrayal of the Native voice and to grow the collection of Native-created art.

99. The Art of Immersive Entertainment
Presenter(s): Nikki Freed
Advisor(s): Dr. Jocelyn Buckner

Entertainment is far more than just sitting back and watching a show, like a live play, a television show, or a film. As technology has evolved, audiences expect to feel like a part of the action. The reason why technology like virtual reality is being incorporated into forms of entertainment is the idea of immersion. Watching a story unfold just isn't enough anymore. Watching a horror movie in a theater is a good Friday night, but walking through one takes every aspect of what is on screen and makes it real. The days of passively watching a bunch of teenagers be murdered by a lake isn't necessarily behind us, but what if you were the one under the machete of a zombie camper? In my thesis, I explore the artists behind the magic, how the worlds become reality, and why people are so drawn to these artistic events. I'm going to get up close and personal with this concept and see how I

can put it into practice, to create an even more enriched experience. After attending Knott's Scary Farm, Universal Halloween Horror Nights, Wasteland Weekend, and researching other immersive pieces this year (2017), I'm taking everything I've learned and designing my own interactive immersion production.

What brings these experiences to life? I've researched the creative process and some of the techniques that are currently being established in the immersive entertainment industry. It's time to go beyond the proscenium, delete the CGI, and make it practical. I am showcasing the work companies like Knott's Berry Farm and Universal Studios create annually for Halloween, the desert city that appears out of thin air in the Mojave for Wasteland Weekend, and productions that take over a building like "Sleep No More" by the Punchdrunk Theatre Company. They have already started pushing the limits on what immersive entertainment is and I'm taking what I've personally gathered from them to guide my design choices for a Post Apocalyptic Horror Survival Experience.

100. "We are Going Live in 3, 2, 1…": Examining Liveness Amidst Streaming Technology
Presenter(s): Jessica Johnson
Advisor(s): Dr. Jocelyn Buckner

The products of the theatre, film, and television industries are becoming increasingly homogenized. The modes of entertainment which feature a live audience experience (film and theatre) have seen a gradual decrease in ticket sales to these experiences, while simultaneously there has been a rapidly increasing number of subscriptions to streaming services providing access to productions from all three mediums (film, theatre, television). This fact represents the public's divergence from the idea of traditional "liveness." Many scholars believe that liveness has the ability to manifest itself in many mediatized forms (such as in 3D, surround sound, etc.), and while this is true, the impact of streaming the products of each industry is having a homogenizing effect on the industries. The experience has taken a back seat to accessibility, sacrificed for convenience. The experience was a key defining element of both film and theatre, and to eliminate liveness for the economic advantage will be the vehicle for permanent homogenization.

As streaming technologies begin to dominate the distribution of the three mediums, the characteristics that once defined and separated each of them are being adopted by one another in order to survive in an increasingly competitive market, or are eliminated altogether in the case of "liveness." It is necessary, therefore, to redefine liveness, and differentiate between the forms of live experience in order to continue to preserve the individuality of the mediums.

101. From Costume to Fashion: Hawaiian Reef Fish
Presenter(s): Aaren Kisner
Advisor(s): Dr. Jocelyn Buckner

The general topic for my research embodies the culmination of the influences of costume design and construction on the fashion industry. For this project, I designed and created a swimsuit line that is based off this research. The basis of the fashion line will be centered around types of Hawaiian reef fish. Each swimsuit in the line will resemble a type of fish, not only through its visual aspects, but through its characteristics within its ecosystem. Before beginning the design process, I did extensive research on the type of clothing design: fashion design, costume design for film, and costume design

for theatre. I then took aspects of each methodology and created my own methodology for designing a fashion line. From this process, I was able to design and build a line of swimsuits. Through scientifically researching the species, as well as integrating how fashion can be viewed as a type of costume design, I hope to create a line of swimsuits that are different than what has been seen before. I also discuss in my paper how my background as both a theatre and business major has influenced my decisions. From my research and analysis, I hope to reveal the importance of integrating all art forms and the benefits of thinking outside the norms of fashion design.

102. Taboo Theatre: An Understanding of the Nature Of Taboo Subjects and How to Create Political Art
Presenter(s): Malvika Lankalingam
Advisor(s): Dr. Jocelyn Buckner

Children often have an unfiltered thought flow and conversation practice. They ask questions about things that didn't make sense to us without shame. Adults develop a censorship to certain words and topics. Sex. Race. Politics. These are all topics that often we often, as a society, deem impolite to discuss. However, these subjects historically have somehow managed to find their way onto the stage. From biblical theatre to government propaganda, the stage has always been used as a forum to both entertain and inform. Over time, many theatrical shows have leaned away from the 'intent' behind a show and focused more on entertainment value. In the current theatrical climate, we are seeing a rebirth of relevant subjects in our society manifest onto the stage in order to create awareness and discussion of issues surrounding controversial subjects. Broadway hits such as Spring Awakening, a show about sex and the coming of age, that was performed by actors with disabilities, and Hamilton, that addresses America's racial and political history, prove that there is a way to bring these topics to light and create open discussions through art. In this project, I identify different methods and approaches, in both the western and eastern cultural contexts, of how to address controversial topics through theatre. I explored a specific topic related to sex, coming of age, and race: menstruation; specifically identifying the societal and cultural roots of this taboo in the country of India. Using my research, I refined my current process of writing a play about menstruation, including themes of race and coming of age, and performed staged reading of the show to an Indian audience at Chapman University in order to study the experience of my target audience through discussion and feedback. My goal was to identify what makes a subject taboo and the process of creating art that addresses such topics in order to jumpstart my career path of creating controversial art to promote social awareness.

103. A Critique and Ideology of Stage Management Pedagogy.
Presenter(s): Margot New
Advisor(s): Dr. Jocelyn Buckner

Stage managers are, stereotypically, the type-A character with little creativity and act as the fun police, but a production environment is more fruitful when the stage manager is treated as a collaborator and empowered to develop a strong community. A stage manager is the keystone of a production as they are the only consistent member from auditions to closing and communicates with all members of the company. If they fail the production will crumble. But the role of the stage manager

and how they perform their duties changes with the times and technologies available, therefore the training must adapt as well. Most stage management textbooks were originally written before the twenty-first century and are slighting updated every few years. These sources teach students how to stage manage in a time before portable personal computers and wireless internet access. Modern stage managers use email, social media, and the online storage services to communicate, create paperwork, and track the show. Very few things besides the blocking are still written by hand, yet classes teach students how to use basic excel and handwrite rehearsal reports. This thesis will discuss how stage management training and education isn't keeping up with the live entertainment industry and producing unqualified stage managers. This will be explored through my personal experience as the stage manager for Chapman University's 2017 production of Cabaret and how my education did or did not prepare me for the position. The application of stage management will, also, be considered through interviews with stage managers, actors, directors, and designers. This thesis will conclude with an ideology surrounding the application and education of stage management.

104. eSports: A New Take on Immersive Theatre
Presenter(s): Kayla Pajarito
Advisor(s): Dr. Jocelyn Buckner

In a technologically growing society, a once quiet community is now rising to become one of the most broadcasted spectacles in the world. When one thinks of sports, one would think about a traditional sport such as football or basketball. Within the last twenty years a new sport has gained a tremendous amount of exposure and continues to grow to this day. eSports is a new genre of sports that focus around the professionalization of video games and the industry surrounding it. Combine the rise of eSports with the advancement of technology and media and out comes a new form of immersive theatre. The growth of eSports expands across oceans, internationally appealing to various countries. Its popularity began once live streaming on the internet became readily available to small organizations and companies. Its presence in the world caters to various fields such as business and marketing, but is especially important when considering its worth as a form of immersive theatre. In an era where the general masses want to see less traditional theatre and more spectacle in their entertainment, it's important to view eSports as a valid area of theatre. Whether the spectators of eSports know it or not, the spectacle that it provides is a clear example of art and community, which is what theatre embodies. My project with explore the importance of eSports in our theatrical community as well as describe how it fits into immersive theatre. By comparing eSports to the spectacles of traditional sports, I will explore how it has grown into one of the biggest forms of immersive theatre in the world today.

World Languages and Cultures

105. **The Artistic and Anthropological Influence of Lighting Design on Guests at the Disneyland Resort**
Presenter(s): Jennifer Pershon
Advisor(s): Dr. Jocelyn Buckner

Lighting and various applications of light within an environment have the potential to influence a viewer's actions, feelings, or attention. Within theatrical applications, light is not only used for practicality and emphasis on areas that seek attention, but designs are also utilized to convey a specific aesthetic that communicates the theme or mood of the performance. Aestheticism, although it's meaning is widely debated for its hierarchal distinction of art, describes an unknown quality of an art piece that brings the viewer a sense of pleasure. Most lighting designs are required to be aesthetically pleasing in order to be effective, and on many applications, the implementations of aesthetics proves to be successful amongst viewers. Disneyland as a space for escapism and entertainment is one of the largest theatrical environments that serves to engross the audience in a sense of wonderment. Carefully constructed designs are applied to this environment to communicate an that idea. The aesthetics of the park are also reflective of their brand image, which is aimed to distinguish Disneyland not only as a unique environment, but an environment that reflects the familiar images that define Disney as a company. These images are present within the parades and theatrical spectacles, as well as throughout the environments within architecture, paintings, and other decorative aspects of the park. Lighting is utilized in the shows as well as in the environment to highlight these images, adding emphasis and aesthetics and thus transforming them from objects into art pieces. These applications of lighting design and technologies utilizes aestheticism to bring about subconscious behaviors, influencing the mood, focus, and reactions of the active participants within Disneyland in accordance to the ultimate goals of the company. Aestheticism of light has a theatrical, social, and economic importance, proving the multifaceted applications of design beyond the theater setting.

106. **An Analysis of Attitudes Regarding Immigration in French and European Society**
Presenter(s): Leila Duntley
Advisor(s): Dr. Allan MacVicar

For my French Senior Thesis, I will explore French and European attitudes towards immigration and discuss the varying possible origins of these attitudes as well as their impacts on French culture. Knowing that different countries in Europe have differing views and concerns regarding immigration, I explore and analyze these differences and their societal and political significance. My goal is to address the potential historical, political, social, and cultural sources of both negative and positive attitudes towards immigrants as well as what the future may hold in terms of the European and French public attitude towards immigrant groups. I discuss statistics and polls in order to better comprehend the social context surrounding these attitudes, while also looking at current EU border policy and recent political events in order to analyze the political climate in which attitudes regarding immigration are being formed.

107. The Effects of Globalization and Americanization on French Cuisine
      Presenter(s): Katherine Neusner
      Advisor(s): Dr. Allan MacVicar

For my French Major Senior Thesis, I have combined my passion for food and French culture by researching the effects of globalization on French cuisine. More specifically, I have examined the "Americanization" of French food and discussed the claim that the rapidly growing fast-food industry threatens the cultural sanctity of French cuisine and the health of the French population. I briefly summarize the history of French cuisine, which has a unique place in France's culture; food for the French is more than just sustenance, it is a vital part of the country's history and identity. Then, I discuss globalization and its effects on French cuisine in a broad sense. The industrial era exponentially increased the distance that food could travel, and thus new flavors and techniques began to pour into France. While many people see this as positive, some of the French are quite defensive of their cuisine, which can be traced to the concept of 'terroir', that is, the close link between land, culture, and history. I then focus on Americanization and how fast food continues to change how the French interact with food. I discuss these effects in two sections: on health and on culture. The influx of fast food in France is correlated with obesity, which poses negative physical and psychological effects on health. In reference to culture, French people are turning away from traditional restaurants and towards more convenient options, and it is easy to point a finger at fast food as the culprit. I consider how the cultural issue is more nuanced than it seems. I then summarize how the French government has responded to the fast food phenomenon in an attempt to protect their culture and the health of the French people. Finally, I aim to answer whether or not the French government should amplify their efforts against Americanization. The expected conclusion is that while the French government has been quite successful in curbing the effects that globalization has had on the country's cuisine, a further commitment to returning to its roots is necessary.

108. Environmental Perspectives in the French versus United States Government
      Presenter(s): Hannah Ritter
      Advisor(s): Dr. Allan MacVicar

The research I have conducted for my French Major Senior Thesis is focused on the difference in governmental perspectives on renewable energy and programs formed because of these perspectives. I took a comparative approach, by analyzing documents published by the EPA and the French Ministre de Transition Ecologique et Solidaire (the equivalent to the EPA). I began by comparing the EPA's Strategic Plan and the French Panorama that they both provide to the public, stating their goals for the coming year and progress made over past year(s). I found that while France was indeed ahead of its European neighbors and other countries, they had little to say as far as concrete progress made towards their goals— or at least little numeric evidence. Quite the opposite was true for the US. They had few federal programs but extensively documented their progress and numbers on such subjects. Since the direction of each department depends on its leadership, I analyzed the media coverage of the two figureheads: Nicholas Hulot and Scott Pruitt. Perspective is clearly provided by the two leaders and seemed to trickle down into the programs run by the two departments. For a concrete example, in the final section of the paper, I am working on a side-by-side comparison between the two most prominent federal programs in both governments: electric cars. It

is clear that while France has a somewhat aggressive target, they have targeted a goal that is behind in terms of projected worldwide growth. I continue to work towards discovering how this program compares to the federal electric car program here in the US. I expect that my work will provide greater clarity in what the US and France can work towards as far as sustainable growth and also what they can learn from each other.

109. **The French National Identity and Social Challenges in Modern French Society**
Presenter(s): Genevieve Vacherot
Advisor(s): Dr. Allan MacVicar

As the world becomes more globalized and France's population grows in diversity, the conception of national identity has become an important question for many people in France. This research investigates how the limited French national identity was reinforced during the colonization of Africa and how that idea of identity is creating challenges for modern French society. The question of national identity was brought to the nation's attention in 2009 with Nicolas Sarkozy's "Grand débat," which was intended to encourage French citizens to define what it means to be French. Based on my analysis of a speech given by Sarkozy, it is clear that the French national identity hinges on language and French republican values, which have been difficult to adjust as the demographics of France's population have shifted. During colonization, the French bestowed the French identity on the colonized people of Africa as if it were a gift, failing to respect the colonized culture or values. This mentality of the French identity as superior is still present today and forces people who are unable or unwilling to conform to the margins of society. This is a particularly complex issue when it comes to France's large Muslim population, as some practices in Islam clash with the French policy of laïcté. This kind of rigid, outdated concept of identity has also caused a move towards nationalism, with the rise of the National Front and Marine Le Pen. The probable conclusion of this research is that the strict nature of the French national identity, reinforced by assimilation during the colonization of Africa, causes these kinds of social challenges in modern French society.

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