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EXPO!

18TH ANNUAL **UNIVERSITY OF PITTSBURGH**
KENNETH P. DIETRICH SCHOOL OF ARTS AND SCIENCES

Grad Expo

FRIDAY, MARCH 23, 2018

18TH ANNUAL
UNIVERSITY OF PITTSBURGH
KENNETH P. DIETRICH SCHOOL
OF ARTS AND SCIENCES

Grad Expo

Sponsored by:
Office of the Provost and the Dietrich School of Arts and Sciences

Organized by:
Arts and Sciences Graduate Student Organization (A&S GSO)

WELCOME TO THE **18TH ANNUAL** ARTS AND SCIENCES **GRAD EXPO**

We would especially like to thank William Kepler Whiteford Professor and Vice Provost for Research Mark S. Redfern and Provost and Senior Vice Chancellor Patricia E. Beeson. From the Kenneth P. Dietrich School of Arts and Sciences, we thank the Bettye J. and Ralph E. Bailey Dean of Arts and Sciences, Kathleen Blee; Associate Dean for Graduate Studies and Research Holger Hoock; and Assistant Dean Tara Meyer. These administrators have been extraordinarily generous in their continuing and increasing support for this conference. We also extend our thanks to Carol Mullen, director of communications for the Dietrich School, for supporting the marketing and advertising efforts for this year's Expo. Thanks also to the Office of University Communications for its hard work in coordinating the creation of the wonderful printed materials. The Grad Expo Committee is indebted to the advocacy of the department representatives serving on the Arts and Sciences Graduate Student Organization (A&S GSO) Council. Without their commitment, this event would not be possible. We extend our appreciation to the student and faculty judges who have taken time out of their busy schedules to help moderate this event and share their feedback with presenters.

This interdisciplinary exposition and conference is a unique opportunity for graduate students from the humanities, social sciences, and natural sciences to develop presentation skills and engage with research from students across the Dietrich School. The Grad Expo Committee is grateful to have the opportunity to coordinate this event. And of course, we thank the presenters for sharing their research and work with the University of Pittsburgh community. Enjoy the day!

Sincerely,

The 2018 Grad Expo Committee
Shelby Brewster, Theatre Arts, chair
Allison Gremba, Anthropology, A&S GSO administrative assistant, cochair
Brianna Howell, Political Science
Amy Karabowicz, Anthropology

SCHEDULE OF EVENTS

9:30 a.m.–1:45 p.m.

Check in—all day, William Pitt Union (WPU), Fifth Floor Lobby

10 a.m.

Podium presentations, Room 527
Podium presentations, Room 538
Podium presentations, Room 539
Poster presentations, Room 548

11 a.m.

Podium presentations, Room 527
Podium presentations, Room 538
Podium presentations, Room 539
Poster presentations continued, Room 548

Noon

Lunch, Room 548
Podium presentations, Room 527

1 p.m.

Podium presentations, Room 527
Podium presentations, Room 538
Podium presentations, Room 539
Poster presentations, Room 548

2 p.m.

Podium presentations, Room 527
Podium presentations, Room 538
Poster presentations continued, Room 548

4–5 p.m.

Roundtable Discussion and Workshop, Room 527
Negotiation Skills for Graduate School and Beyond

5–7 p.m.

Reception
Bridges Restaurant, Wyndham Hotel
100 Lytton Ave., Pittsburgh, PA 15213

ROUNDTABLE DISCUSSION AND WORKSHOP:

Negotiation Skills for Graduate School and Beyond

4 p.m., Room 527 William Pitt Union

Hosted by Tara Meyer, Assistant Dean for Graduate Studies and Research

Featuring Jennifer E. Woodward, PhD, Vice Chancellor for Research Operations and Professor of Surgery, University of Pittsburgh

Whether you are seeking a postdoctoral position, a job, a training opportunity, or just the chance to acquire more experience, effective negotiation skills are vital to your career. In this interactive session, graduate students will develop a toolkit of negotiation strategies and tips that can be used for success at any career stage.

PAPER PRESENTATIONS

10 A.M., Room 527

Cigdem Unal, *Travelling Dangerously: Exposure to Terrorism at Home and the Willingness to Travel to Countries Experiencing Terrorist Attacks*

Leanne Elliott, *How Children Make Sense of Number Talk in Early Childhood: The Importance of Understanding Cardinality*

Humair Omer, *Computational Studies of Ni catalyzed C-H functionalization reactions*

Kelsey Cummings, *Design-Based White Supremacy in Twitter's GIF Search*

Room 538

Zheng Wang, *Quantifying Improvement of New Biomarkers under Competing-Risk Censoring*

Jialin Hou, *Do Divorce Laws Affect the Divorce Decision of Married Couples Differently than Yet-to-marry Singles?*

Molly Bowdring, *A Meta-Analysis of Alcohol Consumption and Perception of Physical Attractiveness*

Alvin Primack, *Inter(s)expertise: A Circumferential-Rhetorical Approach to Examining the Scholar-Activism of the Intersex Rights Movement*

Room 539

Larissa Irizarry, *Clémence's Lament: Processing Grief in "L'amour de Loin"*

Jessica LaVoice, *The Effects of Urban Renewal and Slum Clearance on Neighborhood Outcomes*

Amanda Olmstead, *Développé: Katherine Dunham's Diasporic Dance*

11 A.M., Room 527

Alexandra Maxim, *Heavy Metal Contamination in Hazelwood, Pittsburgh*

Wangcaixuan (Rosa) Zhang, *Rock Musicians Under Censorship: A Comparative Study on Narratives of Rock n' Roll Musicians in Iran and China*

Kori Krueger, *Romantically Committed on Facebook: Why Committed Individuals Represent Themselves Dyadically and With What Consequences*

Melissa Yang, *By Shattering the Vulture's Nose: Sensational Avian Rhetorics*

Room 538

Kimberly Lockwood, *Systemic Inflammation as a Pathway from Perceived Discrimination to Ambulatory Cardiovascular Activity in Healthy Midlife Adults*

Codee Spinner, *Shifting Time and Reality: Narrative and Meta-Opera in John Corigliano's The Ghosts of Versailles*

John Taylor, *The Interstate Logic: How Super Highways Changed the Representation of Time and Space*

Siska De Baerdemaeker, *Can Cosmology Probe Particle Physics Beyond the Standard Model?*

Room 539

Kathryn Johnston, *Impacts of Broth Chemistry on Silver Ion Release, Surface Chemistry Composition, and Bacterial Cytotoxicity of Silver Nanoparticles*

Sarah Smith, *From Code to Shape: Investigating the Link between Genes and the Formation of an Anatomical Structure*

Candice Robinson, *Class Differences in Altruism and Prosocial Behaviors Among Black Americans*

Laura Schwartz, *Confessions from the Killing Jar: "Coming-out" as Reclamation*

Noon, Room 527

Brianna Howell, *Trade and Party Strategy: Consensus and Contention*

Suryodoy Ghoshal, *Building a Viable Decollement Geometry for the Central Nepal Himalaya through Integrating Surface Geology, Thermochronology and Data from the 2015 Gorkha Earthquake*

Mallory Avery, *Violent Resistance to Colonization and Post-Colonial Economic Outcomes*

Ashley Sherman, *Lament and Grieving: Human Vocality in the Oboe in 20th Century Solo Oboe Repertoire*

PAPER PRESENTATIONS CONTINUED

1 P.M., Room 527

Tianyi Wang, *Impact of the Telegraph on News Content in the Mid-19th-Century United States*

Catherine Walsh, *Development of Glucocorticoid Resistance Over One Year Among Mothers of Children Newly Diagnosed with Cancer*

Emmanuelle Ben Hadj, *Abject in Fashion: Monstrous Feminine Bodies in The Neon Demon*

Jacqueline Lombard, *Hidden in Plain Sight: Using Medieval Currency to See Race as a Medieval Viewer*

Room 538

Daniel McClymonds, *When Garden Clubs Revitalize Neighborhoods: Social Dislocations and Civic Repertoires*

Silpa Mukherjee, *"Unbelievable Victory for Isis, Shitty Camera Work for Us:" Deep Web, Visibilizing Death and Orphan Videos of Torture*

Jason Pina, *Temporally Varying Neural Responses to Spatially Periodic Stimuli*

Stefanie Sequeira, *Neural Predictors of Treatment Response in Anxious Youth*

Room 539

Zina Ward, *Epistemic Values and the Intergovernmental Panel on Climate Change*

Kuhu Tanvir, *Indian Cinema on Cellphones: Immersion, Fragments and Failure*

Scott Crawford, *Near-Infrared Photoluminescence from Coinage Metal Nanoparticles*

Chie Togami, *Creating Commitment in an Ecovillage Community*

2 P.M., Room 527

Deborah Danuser, *<Crime> Without Punishment: <Crime> in FDA Commissioner Hamburg's Remarks at the 2010 Partnership for Safe Medicines Interchange*

Domonkos Vamossy, *Investor Attention & Earnings Announcement Returns*

Ariana Brazier, *Black Children as "Actualized Potential"*
TiMar Long, Sacrilege: The Use of Religion in Porn

Room 538

Tomasz Wysocki, *Norms and the choice of college major*

Jonathan Devine, *Animated Documentary in a Post-Factual Era: The Performativity of the Courtroom in Nuts!*

Nikhil Thomas Titus, *Curated Desires: Examining Intersections of Low-Cost Film Exhibition, Migrant Audiences and Gentrification in Mumbai*

Melissa Plakke, *Protease Characterization and Specificity in the Reproductive Tract of Female Butterflies*

POSTER PRESENTATIONS

10 A.M., Room 548

Poster 1
Sebastian Echeverri, *How Best to Catch Her Eye? Leg Waving Functions as an Attention Grabbing Signal in the Courtship of a Jumping Spider*

Poster 2
A. Elizabeth Hildreth, *Determining the Role of the Nucleosome DNA Entry-Exit Site in Transcription Termination in Saccharomyces cerevisiae*

Poster 3
Eden McQueen, *A Gene Network Responsible for a Male Genital Structure Also Patterns a Potentially Coevolving Female Genital Trait*

Poster 4
Nathan Diemler, *Ligand Mediated Deposition of Noble Metals at Nanoparticle Plasmonic Hotspots*

Poster 5
Shreya Ghosh, *Development of Copper Based Strategies to Probe Protein-DNA Interactions*

Poster 6
Sunayana Mitra, *Kinetics of Proton Transfer in Protic Ionic Liquids*

Poster 7
Cheng Fang, *Quasiclassical Molecular Dynamics Simulations to Study the Bifurcation Trajectory of Alkyne Hydroboration with NHC-ÂBoranes*

Poster 8
Cheng Fang, *Computational Study of Copper-Catalyzed Atom Transfer Radical Polymerization (Cu-ATRP) and Catalyst Discovery via Virtual Screening*

Poster 9
Marja Copeland, *Spatial Patterns of Road-Induced Backwater Sediment Storage Across A Rural to Urban Gradient*

Poster 10
Silvia Pisabarro, *Developing Sociolinguistic Competence through Explicit Instruction: The Case of Future-Time Expression in L2 Spanish*

Poster 11
Heather Bruett, *The Role of Inter-region Information Synchrony in Processing Visual Stimuli*

Poster 12
Susie Chen, *Am I a Science Person?: The Interplay between Science Identity and a Belonging Intervention on College Science Success*

Poster 13
Griffin Koch, *Perceptual and Conceptual Dimensions Impacting Animate Items in the Human Ventral Stream*

Poster 14
Lea Martin, *Reading an Artificial Orthography Results in Left Visual Word Form Area Activation*

Poster 15
Lea Martin, *Lingering over Smoking Cues can be Pleasant: Can Behavioral Tasks Inform fMRI Data during Positive Anticipatory Cravings?*

Poster 16
Joshua Schneider, *Object Exploration & Play in Tajikistan*

Poster 17
Kori Krueger, *Perceiving Partner Responsiveness: The Role of Responsiveness Baselines*

Poster 18
Yu Liu, *Minimax Estimation of Large Precision Matrices with Bandable Cholesky Factor*

1 P.M., Room 548

Poster 1
Sharon Toth, *A Nutty Experiment: Statistical Analysis of Experimental Trials of Human Acorn Foraging*

Poster 2
Mitchell Ellison, *Regulation of RNA Polymerase II Transcription in Saccharomyces cerevisiae by the Polymerase Associated Factor 1 Complex*

Poster 3
Andrea Fetters, *Detection of Viruses in Pollen from Three Urban Plant Species*

Poster 4
Maiwase Tembo, *PIP2 and Ca2+ Are Both Required to Open TMEM16a Channels in Xenopus laevis Oocytes*

Poster 5
Xing Yee Gan, *Correlating Carrier Densities with Composition and Surface Ligands in Cu2-xSe Nanoparticles*

POSTER PRESENTATIONS CONTINUED

Poster 6
Kyeongwoo Jang, *Chemoselective Phenylpyruvate Detection by Responsive Hydrogels*

Poster 7
Arailym Kairalapova, *Non-Valence Correlation-Bound Anions*

Poster 8
Huiling Shao, *Computational Study of Photo- and Redox-switchable Ring-Opening Metathesis Polymerization and Ring Closing Metathesis*

Poster 9
Marta Boczon, *Recessions' Impact on Health Revisited*

Poster 10
Victoria Buford, *The Implications of Subsurface Geometry on Earthquake Hazards: A Case Study in the Bolivian Andes*

Poster 11
Memphis Hill, *Reconstruction of Legacy Metal Contamination Downwind of the Cradle of the Fossil Fuel Industrial Revolution*

Poster 12
Dominique Branson, *Sounding Guilty: African American English and Racial Inequality in the Courtroom*

Poster 13
Sean Nonnenmacher, *Linguistic Insurgency: Online Queer and Trans Youth Discourse*

Poster 14
Xinyi Wu, *Breaking Electron Pairs in Pseudogap State in SmTiO3/SrTiO3/SmTiO3 Quantum Wells*

Poster 15
Jamie Amemiya, *Understanding Vicious Cycles of School Discipline*

Poster 16
Kole Norberg, *Adversative Connectives' Effect on Recognition Memory*

Poster 17
Tim Coleman, *An Efficient Permutation Test for Feature Significance in Ensemble Methods*

ABSTRACTS (In alphabetical order)

Amemiya, Jamie *(Psychology)*
Room 548, 10 a.m.–noon
Understanding Vicious Cycles of School Discipline

Adolescents may become ensnared in a vicious cycle of school discipline that begins with teachers' punishment for minor misconduct, follows with adolescents' reaction of defiant behavior, and continues to escalate over time. Because of teachers' potential racial biases, racial minority students may be most likely to be punished for minor misbehavior and enter this vicious cycle. Applying a latent class analysis and fixed-effects models to 729 adolescents' (Mage = 13.48 years; 53% female; 75% Black; 25% White) disciplinary infractions for minor misconduct and defiant behavior over one school year, this study tested (a) if there were subgroups of adolescents whose disciplinary infractions indicated being ensnared in such a vicious cycle, (b) whether minor infractions predicted increases in defiant behavior infractions and vice versa, and (c) the role of race in this cycle. Three latent classes were identified: an abstaining group with no infractions (60%), a moderate vicious cycle group with increasing minor and defiant infractions at moderate levels (30%), and a high vicious cycle group with increasing minor and defiant infractions at high levels (10%). Fixed-effects models showed that minor infractions predicted increases in defiant behavior infractions (OR = 1.58, $p < .05$) and defiant behavior infractions predict increases in minor infractions (OR = 1.44, $p < .05$). Black adolescents were more likely to be in the vicious cycle groups and were more likely to receive minor infractions, even when controlling for behavior problems. Taken together, teachers may need to develop more culturally sensitive discipline practices that better support racial minority adolescents.

Avery, Mallory *(Economics)*
Room 527, noon–1 p.m.
Violent Resistance to Colonization and Post-Colonial Economic Outcomes

An extensive literature in development economics has analyzed the relationship between colonial institutions and present-day outcomes for former colonies. However, this literature has not addressed the formative experience of resistance to colonization and violence at colonization that was inherent in most colonial situations, and how that initial colonial experience shaped the relationship between colonizer and colony and the institutions thus established. This study analyzes the relationship between resistance to colonization by the native population and present-day economic outcomes. I show that former colonies with a history of resistance to colonization have 60%-70% lower GDP/capita today, compared to former colonies that were colonized without resistance. Potential mechanisms are considered, and some are ruled out. An analysis of case studies of colonization conditions shows that groups who were stronger economically, politically, and militarily before colonization were more likely to resist colonization. If there is a direct positive relationship between pre-colonial conditions and post-colonial outcomes, it would work against the effects I find here.

Ben Hadj, Emmanuelle *(French/Film and Media Studies)*
Room 527, 1–2 p.m.
Abject in Fashion: Monstrous Feminine Bodies in The Neon Demon

"Beauty isn't everything. It's the only thing." The fashion and beauty industries are often associated with perfectness and smoothness; but what happens when abject comes in and disturbs the integrity of industries based on surface and superficiality? Julia Kristeva defines the abject as the repulsive, "beyond the scope of the tolerable." And yet, like beauty, it attracts and fascinates. Using Nicolas Winding-Refn's The Neon Demon (2016), I argue that beauty and abject reconcile in the constant search for perfection and novelty of the fashion world. The film's young and innocent heroine Jesse is caught up in a merciless competition among physically identical models, falling prey to their cannibalistic practices. In rejecting the border between physical exteriority and internal organs, the film turns the subject into a consumed object. For this reason, I contend that The Neon Demon reflects Barbara Creed's concept of the "monstrous feminine," but this time within attractive yet aseptic fashion models.

Boczon, Marta *(Economics)*
Room 548, 1–3 p.m.
Recessions' Impact on Health Revisited

In my work I focus on the relationship between the Body Mass Index (BMI), which is a broadly available and easy to compute measure of body mass, and unemployment rate. This research is inspired by a seminal paper by Christopher Ruhm, "Are recessions good for your health?," where he proposes a panel data approach to examine the relationship between a range of health-related outcomes (including the BMI) and mean unemployment rate. He finds that, in most instances, the relationship in question is statistically significant and based on its sign, he concludes that health improves during recessions. Ruhm's paper was acclaimed and started a new line of research in economics on recessions and health. For almost 20 years, there has been little discussion of the validity and potential shortcomings of his methodology, which has been extensively replicated and used to produce an abundance of related research. In sharp contrast, in my own research, I identify several shortcomings and address them by introducing a new methodology extending that of Ruhm. My work indicates that there is a need to reexamine the links between recessions and health and I develop a novel approach to do so. While my initial

results complement rather than contradict those in the literature, they provide a novel and much needed reconsideration of how to correctly analyze the relationship between economic cycles and the well-being of economic agents.

Bowdring, Molly *(Psychology)*
Room 538, 10–11 a.m.
A Meta-Analysis of Alcohol Consumption and Perception of Physical Attractiveness

Background/Aims. Drinking typically occurs in social settings, yet experimental alcohol research to date has largely ignored social context. Broader investigation of associations between alcohol and social experience is needed to advance understanding of the rewarding and hazardous effects of alcohol use. The present review aimed to (a) consolidate research on alcohol's relation to an impactful aspect of social experience: perception of others' physical attractiveness and (b) suggest theoretical and methodological considerations that may advance the study of this important topic. Methods. Systematic review of Scopus and PsycInfo databases identified lab- and field-based studies that assessed attractiveness ratings provided by both individuals who had and had not consumed alcohol (k=16 studies). A meta-analysis was conducted to evaluate alcohol's aggregate association with physical attractiveness perceptions. Separate secondary analyses examined alcohol's associations with opposite-sex and same-sex attractiveness perceptions. Results. The primary analysis indicated that alcohol was significantly related to enhanced attractiveness perceptions (d=0.22, 95% CI=0.10 to 0.33, p<.001). Analysis of alcohol's association with perception of opposite-sex attractiveness similarly yielded a small, significant positive association (d=0.29, 95% CI=0.14 to 0.44, p<.001). Alcohol's relation to perception of same-sex attractiveness was not significant (d=0.05, 95% CI=-0.21 to 0.31, p=.71). Conclusions. Perceptions of physical attractiveness appear enhanced among individuals who consume alcohol compared to those who do not, though alcohol's relation to attractiveness perceptions may differ between opposite-sex and same-sex perceptions. The small size and methodological limitations of the current literature, however, preclude definitive conclusions regarding the magnitude of the association between alcohol and physical attractiveness perceptions.

Branson, Dominique *(Linguistics)*
Room 548, 1–3 p.m.
Sounding Guilty: African American English and Racial Inequality in the Courtroom

On July 13, 2013, George Zimmerman was found not guilty for the shooting death of African American youth, Trayvon Martin. Enraged, protesters demanded, "Justice for Trayvon!" No one demanded justice for his African American English (AAE) speaking friend and key witness, Rachel Jeantel. Jeantel was criticized for using AAE during her 5.8 hour testimony. Moreover, the defense and jurors noted their inability to understand or trust Jeantel's testimony. Thus, AAE use appears to influence AAE speakers' legal outcomes. Baugh's work (2003) on linguistic profiling shows that African Americans face housing discrimination due to speech-based stereotypes. Correspondingly, he offers that these discriminatory acts have legal implications in court cases. Rickford and King (2016) use Jeantel's testimony to demonstrate how AAE use in court puts Linguistics itself on trial, damaging the credibility of AAE speakers via dialect unfamiliarity and institutionalized racism. Eberhardt et. al, (2006) found that defendants with more Black phenotypes face the death penalty more often than their less Black-looking counterparts. These defendants were deemed, "look deathworthy." From such research, I designed an experiment using AAE and Standard English (SE) versions of Jeantel's testimony to test whether using AAE makes a defendant or witness "sound deathworthy" or, sound guilty. Results indicate that jurors comprehend less of the 'witness' testimony in AAE compared to SE. Additionally, jurors perceive the AAE-speaking 'witness' as less informative and less reliable compared to the SE-speaking 'witness'. Implications of these findings for racial equality in the U.S. criminal justice system is provided as a conclusion.

Brazier, Ariana *(English)*
Room 527, 2–3 p.m.
Black Children as "Actualized Potential"

The specific social coordinates of Black, low-income children are frequently severed into categories that isolate and inadequately address only fractions of their existence. This paper examines the challenges of identifying and/or establishing a methodology that locates children, particularly low-income Black children, within their own culture. Robin Bernstein, Shawn Ginwright, Aimee Meredith Cox, and other scholars engaged throughout this paper seek to counter the violence of this severance by identifying the myriad forms through which Black children's agency is manifested and the ways in which spaces are transformed by their radical presence. According to Bernstein, children's culture is situated at the intersection of scripting and agency, both of which converge in play. Consequently, children discover and create new forms of play that open them up to new ways of being - existing within their current circumstances, within their social networks, and within the larger world that constitutes their reality. I analyze the effectiveness of ethnography as a methodology seeking to explore the question of how children resist and conceptualize their own subject positions. Essentially, ethnography allows a principal observer to see most clearly how children make sense of their experiences. Moreover, an ethnographic approach can help reveal the transformational processes that develop Black children's radical imaginations and intellectual lives. To date, ethnography appears to be the most accessible and realistic methodology

available to researchers and adults more generally, as they seek to highlight Black children actualizing themselves, each other, and the revolutionary potentiality of their larger communities.

Bruett, Heather *(Psychology)*
Room 548, 10 a.m.–noon
The Role of Inter-Region Information Synchrony in Processing Visual Stimuli

The brain processes the many aspects of visual stimuli via the coordinated activity of a number of relevant regions. The processing targets of these regions can be uncovered by "decoding" multivoxel activity patterns, which can represent subtle distributed information. An approach that examines the timeseries of pattern discriminability - informational connectivity - can help determine which regions contain information in the same trials - in other words, which regions are acting in synchrony. I will present fMRI data that was analyzed via multivariate analysis tools and informational connectivity to determine how information synchrony plays a role in processing scenes and objects. We ask how regions within the scene and object processing networks can decode scenes and objects from "pseudo-scenes," which contain certain elements present in typical scenes but lack other visual components. We find that the strength of informational connectivity within these networks differs based on the object or scene discriminations examined. The findings are particularly methodologically interesting, as they demonstrate the specificity provided by informational connectivity as a measure of neural synchrony above and beyond that of other measures, such as functional connectivity and psychophysiological interaction (PPI).

Buford, Victoria *(Geology and Environmental Science)*
Room 548, 1–3 p.m.
The Implications of Subsurface Geometry on Earthquake Hazards: A Case Study in the Bolivian Andes

Earthquakes, of all natural hazards, affect the broadest regions and are tremendously destructive to both life and property. The size of an earthquake is denoted by its moment magnitude (Mw), which is a measure of the energy released and thus a proxy for how destructive the earthquake is. Mw is directly related to the area of the fault plane that ruptures, which is constrained by its geometry. Thrust faults generally follow the pre-existing horizontal strata for 10-100s of kilometers, and then ramp up at 30-45° angle for a few kilometers. These ramps occur both parallel to and perpendicular to the direction of shortening (frontal and lateral ramps, respectively). The maximum possible area of rupture is limited by the location of these ramps and the extent of the flat in between. Ramp locations are crucial to hazards assessments; both because of their control on the available fault plane and the focused uplift above them. In the Andes, the majority of earthquake hazard research focuses on the Nazca-Pacific Plate boundary, as historic earthquakes in the region have caused much devastation, like the Mw=8.4 earthquake in 2001. My research focuses on the eastern side of the Andes to understand the subsurface geometry along which the Andes are deforming, where previous studies have shown that the possible earthquake magnitudes have likely been underestimated.

Chen, Susie *(Psychology)*
Room 548, 10 a.m.–noon
Am I a Science Person?: The Interplay Between Science Identity and a Belonging Intervention on College Science Success

College students juggle a variety of identities, from athlete to student to friend. These identities not only inform students of where they belong in the university, but also shape students' college experience. Studies suggest that students who weakly-identify with an academic identity are likely to have decreased persistence and knowledge retention. However, little is known about an identity that may be relevant to success in STEM fields: students' science identity. The current study explored how a randomly-assigned social-belonging intervention delivered in an introductory science course (N = 639) interacted with students' science identity, that is, how much they identified with being a "science person." Specifically, we examined if the belonging intervention could improve academic and psychological outcomes for students with low science identification. Results indicated that students with low science identity benefited disproportionately from the intervention; these students were more likely to pass the course and perceive more belonging at the university. Notably, this effect for passing was particularly strong among at-risk minority students (i.e., ethnic/racial minorities with low representation at the school). These findings suggest that students with a low science identity may be especially anxious about belonging in science, and the delivery of a belonging intervention could potentially buffer against this worry. This study provides a novel contribution to the academic and science identity literature, and it sheds light on the factors that shape performance and belonging in the classroom.

Coleman, Tim *(Statistics)*
Room 548, 1–3 p.m.
An Efficient Permutation Test for Feature Significance in Ensemble Methods

Random forests are popular models for making predictions using many observations on predictors which may interact in complex ways. The ensemble nature of random forests severely increases the difficulty of conducting feature selection. We propose a permutation test approach to feature significance, which exploits the averaging nature of ensemble methods. To test feature

significance of a particular variable, we build two ensembles of trees: one with the variable left undisturbed, and another with the variable excluded in some way. Then, the labels of the trees are shuffled randomly, reflecting a null hypothesis that if the feature is unimportant, the ensembles of shuffled trees should be similar to each other. For each permutation, predictions are made at fixed test points, and summary statistics, such as Mean Squared Error or GINI index, are calculated. This method can be used to analyze predictions made by models at high numbers of test points at minimal extra cost. Moreover, the testing framework works with many existing implementation of random forests. We present simulation results comparing power calculations of this test to more complex resampling tests. We also analyze the probabilistic validity of the hypothesis test via a simulation study and then suggest avenues for theoretical analysis of this methodology. Finally, we explore applications of this test to real-world datasets, where tests of feature significance in ensemble methods are of scientific interest.

Copeland, Marja *(Geology and Environmental Science)*
Room 548, 10 a.m.–noon
Spatial Patterns of Road-Induced Backwater Sediment Storage Across A Rural To Urban Gradient

Road networks dominate many landscapes and often interact with stream networks to alter basin sediment dynamics. Currently, conceptual models of catchment-scale sediment fluxes remain at a coarse scale (i.e., the entire catchment) and are unable to resolve important human-driven sediment storage processes. The spatio-temporal complexity of the interactions between road networks and streams has made it challenging to infer the fine-scale impacts of road crossings on fluvial systems. Here, road crossings in multiple drainage networks and the associated backwater sediment accumulations are examined along a rural to urban gradient around Pittsburgh, PA. Preliminary results indicate that upstream drainage area, channel slope, and human activities control stream crossing type and therefore drive associated sediment accumulation, particularly in urban headwater channels. The data indicate that the combination of land use intensity and infrastructure age influences the volume of sediment trapped in road-induced backwaters. Clarification of the coupled human, road-building, and natural stream adjustments will allow for more effective treatments of fluvial impacts, such as the "urban stream syndrome."

Crawford, Scott *(Chemistry)*
Room 539, 1–2 p.m.
Near-Infrared Photoluminescence from Coinage Metal Nanoparticles

Nanoparticles are an exciting class of materials due to their high surface area-to-volume ratio, in which the majority of the atoms are located on the surface of the particle. Hence, unlike bulk materials, nanoparticles exhibit unique properties that can be controlled by changing particle structural parameters such as size and shape, which has enabled them to be exploited for numerous applications in areas including energy and medicine. Gold nanoparticles, which are among the most well-studied systems, produce near-infrared light whenever they are exposed to ultra-violet light, which is important for applications such as biological imaging. However, gold is both expensive and rare. Copper and silver are promising alternatives due to their relatively high abundance and lower material cost. Here, previously unobserved near-infrared emission from copper and silver nanoparticles is reported, and their photoluminescent performance is compared both to each other and to gold. Remarkably, the performance of the less-expensive copper and silver nanoparticles is comparable to that of analogously synthesized gold nanoparticles, and the physical mechanism of this emission appears to be similar for each metal. Taken together, this work provides new insights into physical processes at the nanoscale while also providing foundational work for the development of cost-effective metal-based materials for near-infrared applications.

Cummings, Kelsey *(English)*
Room 527, 10–11 a.m.
Design-Based White Supremacy in Twitter's GIF Search

This paper establishes a theoretical framework combining visual culture studies with software studies in order to consider the engineering of whiteness and white supremacy in new media contexts. The increasing visibility and rise of white nationalist movements in Western nations have important ramifications not only for global politics, but also for the cultural conditions of which they are reflective and within which they are reflected. By conducting research on the role of race and racism in the visual- and software-based designs of new media contexts, this work will expand on existing studies of both media design and visual culture. The concept of platformization, the increasing characterizing of new media as conglomerates of both interpersonal communication and corporate promotion, is central to my project's consideration of the relationships among racial politics, representation, and new media. Trend-managing algorithms, user-specific targeting, and similar time-sensitive promotion of content reflect the ways in which new media platforms imagine themselves to simultaneously transfer lay users' relationships to and communications with one another alongside corporate advertising. This paper's cultural relevance lies in its exploration of the ways in which white supremacy, rather than being only present in its overt expressions by users, is fundamentally built into platform design (here, I draw from historical research on photography and film's technology-based prioritizations of white skin). As a result, my goal is to contribute new insight into both popular and scholarly discussions of the relationships between race and new media.

Danuser, Deborah *(Communication)*
Room 527, 2–3 p.m.
<Crime> Without Punishment: <Crime> in FDA Commissioner Hamburg's Remarks at the 2010 Partnership for Safe Medicines Interchange

Although not prevalent in the United States, counterfeit drugs are a serious, global public health issue. Despite concerns that it creates numerous opportunities for criminals to infiltrate the supply chain with counterfeit drugs and undermine drug safety, there is growing support in Congress to allow direct consumer drug importation as a means of lowering healthcare costs. Given the perennial efforts in Congress to legalize drug importation, a critical analysis of a top government official on the subject of counterfeit drugs is merited. On Oct. 8, 2010, Margaret A. Hamburg, then the sitting Commissioner of Food and Drug, delivered the keynote speech at the inaugural Partnership for Safe Medicines Interchange at the National Press Club in Washington, D.C. In this paper, I examine Hamburg's remarks on counterfeit drugs and the themes present in the speech, as well as provide an ideographic analysis of the crime themes both present in her address and the crime themes conspicuously absent. I argue that while Hamburg invokes the ideograph of crime repeatedly in her remarks, her invocation of crime relies primarily on the concepts of prevention and detection to safeguard the public from this public health threat. Yet, Hamburg never raises the ideas of punishment or enforcement in her remarks. This is unexpected as policymakers and politicians strive to be seen as "tough on crime." She indirectly addressees the idea of who are the criminals and victims in counterfeit drug crimes, but does not clearly describe nor define these groups.

De Baerdemaeker, Siska *(History and Philosophy of Science)*
Room 538, 11 a.m.–noon
Can Cosmology Probe Particle Physics Beyond the Standard Model?

The current culmination of particle accelerators is arguably the construction of the Large Hadron Collider (LHC) at CERN, with the discovery of the Higgs-boson, announced in 2012, as its crowning achievement. Despite the incredible successes, however, experiments at the LHC have failed to turn up any surprising physics beyond the standard model (BSM). Moreover, with the LHC, particle physics is approaching the limits to what is possible with terrestrial accelerator experiments. New probes for BSM physics are needed. The prime candidate for such a new probe is the early universe. By observing remnants of the early universe, in particular the Cosmic Microwave Background (CMB), particle physicists are hoping to uncover new and surprising evidence for BSM physics. The turn towards the CMB is posing an important epistemic question for particle physicists: how does the epistemic justification for constraints from the CMB compare to the justification for evidence from accelerator experiments? I intend to approach this question by focusing on the possibility of natural experiments: can the use of the CMB for constraints on BSM physics be reconstructed as a natural experiment, where results from natural experiments have similar epistemic justifications to accelerator experiments?

Devine, Jonathan *(French and Italian)*
Room 538, 2–3 p.m.
Animated Documentary in a Post-Factual Era: The Performativity of the Courtroom in Nuts!

The relationship between documentary and veracity is an urgent question, as we seemingly enter a post-factual period in the 21st century. The issue of truth becomes even more complicated when viewing documentaries that make use of animation, since animated representations have a different materiality than their real-life counterparts. However, what happens when a film combines both live-action and animated footage? Scholarship in this field remains rather sparse, and most of it has been written in the past ten years. My case study here will therefore add to this growing corpus by discussing a film released in 2016: *Nuts!* This documentary details the career of John R. Brinkley, a doctor and huckster who tried to use goat testicles to cure male impotence in the early 20th century. However, *Nuts!* also contains sequences of animated reenactments that are characterized by a melodramatic soundtrack, theatrical human behavior, and sometimes preposterous dialogue. The film is very self-aware of its fictional nature; the reenactments take place in the courtroom, the various characters attempting to uncover the “truth” behind Brinkley’s dubious medical practice. I propose that these reenactments act as an alternate means to represent the experience and contradictions of Brinkley’s life, and the justice system in general. In that way, Nuts! asks questions that change our thinking about what it means to be post-truth.

Diemler, Nathan *(Chemistry)*
Room 548, 10 a.m.–noon
Ligand Mediated Deposition of Noble Metals at Nanoparticle Plasmonic Hotspots

We report the use of gold nanoparticle surface chemistry as a tool for site-selective noble metal deposition onto colloidal gold nanoparticle substrates. Specifically, we demonstrate that partial passivation of the gold nanoparticle surface using thiolated ligands can induce a transition from linear palladium island deposition to growth of palladium selectively at plasmonic hotspots on the edges or vertices of the underlying particle substrate. Further, we demonstrate the broader applicability of this approach with respect to substrate morphology (e.g., prismatic and rod-shaped nanoparticles), secondary metal (e.g., palladium, gold, and platinum), and surface ligand (e.g., surfactant molecules

and n-alkanethiols). Taken together, these results demonstrate the important role of metal–ligand surface chemistry and ligand packing density on the resulting modes of multimetallic nanoparticle growth, and in particular, the ability to direct that growth to particle regions of impact such as plasmonic hotspots.

Echeverri, Sebastian *(Biological Sciences)*
Room 548, 10 a.m.–noon
How Best to Catch Her Eye? Leg Waving Functions as an Attention Grabbing Signal in the Courtship of a Jumping Spider

When faced with complex visual scenes, animals must strategically decide where to look and pay attention. Communicatory signals compete with other stimuli for the receiver's attention. If the receiver chooses to look away, the signaler's effort can wasted. How do signalers capture and maintain their receiver's attention in the face of distractions? We studied this question in the jumping spider *Habronattus pyrrithrix*, in which males perform colorful courtship dances for females. However, females can only see a male's colors with her primary, forward-facing pair of eyes. When she turns away from him, his colors are lost on her. How then, does he catch her eye? Does this change when the environment is distracting? Males frequently wave their first pair of legs during courtship, and we tested how these waving displays attract female attention. We presented females with competing animations of waving and non-waving courting males, and asked how velocity and amplitude of leg waves affected female visual responses across a series of still and moving backgrounds. Females investigated waving males more often, and this preference actually increased when backgrounds were complex. We conclude that waving displays, which are common to many jumping spider species, function to capture female visual attention.

Elliott, Leanne *(Psychology)*
Room 527, 10–11 a.m.
How Children Make Sense of Number Talk in Early Childhood: The Importance of Understanding Cardinality

Conversations between parents and children about numbers, here referred to as number talk, can help support young children's math skills (Gunderson & Levine, 2010; Levine, Suriyakham, Rowe, Huttenlocher, & Gunderson, 2010). However, little is known about how children's characteristics contribute to these interactions. In the present study we examined how children's foundational math skills, namely their understanding of cardinality (i.e., that counting can be used to identify the number of objects in a set), moderate associations between parental number talk and children's math skills. Forty-two three-year-old children (18 girls) and their parents played with a standard set of toys for 10 minutes, where parental number talk was operationalized as the proportion of number words out of the total words used by the parent. Children's understanding of cardinality was assessed through the Give-N task (Wynn, 1990), in which children were asked to give the experimenter the correct number of requested items. Two months later, children completed a standardized test of math ability. Children's understanding of cardinality significantly predicted math skills, but associations with number talk were only marginally significant when controlling for child age, gender, and vocabulary. However, number talk was significantly more strongly associated with math skills among children with better understanding of cardinality. This interaction was also more pronounced among larger number words, suggesting that parents' use of small numbers may be more universally beneficial. These results highlight the need for tailored interactions about math at home that match children's existing skill levels.

Ellison, Mitchell *(Biological Sciences)*
Room 548, 1–3 p.m.
Regulation of RNA Polymerase II Transcription in Saccharomyces cerevisiae by the Polymerase Associated Factor 1 Complex

As a central step in gene expression, the process of making messenger RNA (mRNA), also known as transcription, is regulated by many regulatory proteins. The polymerase associated factor 1 complex (Paf1C) is an epigenetic regulator of transcription by RNA polymerase II (Pol II), the enzyme responsible for synthesizing mRNA in eukaryotes. Paf1C regulates transcription by promoting the placement of co-transcriptional histone modifications. It is unclear how loss of Paf1C affects the eukaryotic transcriptome (the collection of all RNAs encoded by the genome), particularly with respect to non-coding RNAs. Using whole genome tiling arrays, we determined how deletion of PAF1 affects the yeast transcriptome. We found that PAF1 deletion affects all classes of Pol II transcribed RNAs in S. cerevisiae with the largest changes observed for mRNAs and cryptic unstable transcripts (CUTs). Gene ontology analysis revealed that mRNAs encoding iron and phosphate homeostasis genes were differentially affected by deletion of PAF1. We further investigated these two groups of mRNAs with the goal of identifying overarching mechanisms of Paf1-dependent regulation. Our results indicate that changes in mRNA levels of a subset of genes can be attributed to loss of specific histone modifications in cells lacking Paf1. In one case analyzed in detail, we found that transcription of the FET4 gene is differentially regulated by Paf1 and an upstream CUT. Together these data highlight the complexity of the epigenetic regulation of Pol II transcription imposed by Paf1C and identify a role for Paf1C in promoting CUT transcription.

Fang, Cheng *(Computational Modeling and Simulation)*
Room 548, 10 a.m.–noon

Quasiclassical Molecular Dynamics Simulations to Study the Bifurcation Trajectory of Alkyne Hydroboration with NHC-ÂBoranes

Hydroboration of alkynes with borane is one of the most classical reactions in organic chemistry, which occurs via a synchronous concerted four-membered ring transition state to form cis-products. Prof. Dennis Curran's group recently developed a direct hydroboration of electron-deficient alkynes with NHC-boranes to offer exclusive trans-products, and most interestingly unusual three-membered boriranes product. In this study, I employ computational chemistry modeling techniques that includes DFT calculation, and ab-initio molecular dynamic simulation to investigate the mechanism of NHC-borane hydroboration with electron-deficient alkyne. Our calculation revealed that the mechanism favors a trans-selectivehydride transfer process to form the complex of NHC borenium and the alkenyl anion, followed by bifurcation trajectory to form alkenylborane and borirane products via a single transition state. Our modeling and simulation results are in good agreement with experimental observation, and provide insights into this novel chemistry reaction.

Fang, Cheng *(Computational Modeling and Simulation)*
Room 548, 10 a.m.–noon

Computational Study of Copper-Catalyzed Atom Transfer Radical Polymerization (Cu-ATRP) and Catalyst Discovery via Virtual Screening

Copper-catalyzed atom transfer radical polymerization (Cu-ATRP) is among most powerful controlled radical polymerization techniques that has been widely used in synthesis of various polymers with precisely-controlled architectures. Control over polymer structures via Cu-ATRP is largely attributed to the fast inner sphere electron transfer (ISET) process, which involves a reversible halogen (X) transfer between a propagating substrate chain end(Pn-X) and active catalyst (CuI/L), resulting in the formation of propagating substrate radicals (Pn) and inactive catalyst X-CuII/L. However, the detailed mechanism of ISET process has not been fully explored by experiments and computations, which hinders rational design of Cu-ATRP catalysts. In this study, we attempt to establish an accurate computational model for ISET transition state [L/Cu--X--Pn]â€¡, and to provide a predictive model for novel catalyst discovery in Cu-ATRP. First, we employ density functional theory (DFT) methods to investigate the geometries and energies of transition states for representative substrates with a given catalyst. The method wb97XD/def2TZVP in SMD solvation model, which gives the best correlation between calculated and experimental transition state energies, has been identified as the most accurate method. Next, we develop the catalyst-substrate interaction model to dissect the total transition state energy into through-bond and through-space interaction between catalyst and substrate. The latter is subsequently segmented into electrostatic interaction, steric repulsion, and dispersion via energy decomposition analysis (EDA). This model has successfully applied to study the origin of catalyst effect on reactivity. Finally, we build a virtual catalyst screening protocol that inherits two key components: automatic geometry generation of transition states for a catalyst library, and efficient scoring function to approximate transition states energies. The top ranked catalyst candidates are further validated using high-level DFT calculations and experimental tests.

Fetters, Andrea *(Biological Sciences)*
Room 548, 1–3 p.m.

Detection of Viruses in Pollen from Three Urban Plant Species

Pathogens are important regulators of their hosts, and viral pathogens cause nearly half of all plant emerging infectious diseases, and also represent a growing threat to plant biodiversity. Yet, we have an incomplete understanding of the prevalence and variability of RNA viruses in plants. Pollen carried by pollinators may be a key vehicle for viral transmission, and this route might contribute to maintaining viruses in plant populations. While several pollen-mediated plant viruses ("pollen viruses") have been identified in symptomatic crops, we have focused on asymptomatic wild species. We collected pollen and leaf tissue from Heliopsis helianthoides, Impatiens pallida, and Solidago canadensis in Summer 2017 from various locations in Schenley Park. Our goal was to characterize known and novel RNA viruses in the collected pollen by using our viral detection pipeline based upon the percentage identity of assembled viral contigs to complete NCBI viral reference genomes. We also sought to determine whether the same viruses were present in leaf tissue collected from the same plants. We are in the process of extracting the RNA from all collected material, and we will have the Next Generation Sequencing data by early March, from which we anticipate that we will be able to detect RNA pollen viruses. Our metagenomic approach to viral detection accelerates our understanding of plant-pollinator-virus interactions in the wild. Conducting this work in an urban habitat is especially relevant, as this setting is where viral pathogen spillover and spillback poses one of the most significant threats to plant biodiversity.

Gan, Xing Yee *(Chemistry)*
Room 548, 1–3 p.m.

Correlating Carrier Densities with Composition and Surface Ligands in Cu2-xSe Nanoparticles

Localized surface plasmon resonances (LSPRs) have been broadly studied and are a property of nanomaterials that can be used to enhance or enable a wide variety of technologies including

cancer treatment, light-driven catalysis, and ultrasensitive detection. While most widely observed and studied in noble metal nanomaterials, a much broader selection of nanoscale materials may exhibit LSPRs. Recently, degenerately-doped semiconductor nanoparticles have been identified as one such class of alternative plasmonic nanomaterials. Unlike their noble metal counterparts, a powerful way to tune plasmonic properties of doped semiconductor nanoparticles is by controlling their carrier density. Therefore, methods to control and measure carrier density in these materials are crucial to their development, and the resulting densities are typically measured via the interpretation of the optical extinction spectrum. Here, we study carrier density in a well-characterized non-noble metal plasmonic system, copper selenide (Cu2-xSe). Using both the extinction and nuclear magnetic resonance (NMR) spin lattice relaxation measurements, we track and quantify carrier density changes as a function of particle oxidation. We find that NMR spectroscopy is able to identify and measure carrier density in Cu2-xSe systems that do not yet show optically discernable plasmonic features. Further, NMR simultaneously provides critical information about the structural evolution of these particles as a function of progressive oxidation. We then use these analytical techniques to study the use of surface chemistry to tune LSPR behaviors in these nanoparticles. Our initial studies have focused on decoupling the influence of changes in medium dielectric properties from ligand-induced carrier density changes.

Ghosh, Shreya *(Chemistry)*
Room 548, 10 a.m.–noon
Development of Copper Based Strategies to Probe Protein-DNA Interactions

Interactions between proteins and specific sequences of DNA lie at the heart of many cellular processes. My broad aim is to develop methods that allow us to build an atomic level picture of such interactions and to apply this technology to understand these key cellular processes. One such process I am interested in is the mechanism by which bacterial cells regulate the amount of copper as free copper ion is toxic to the cell. There is limited understanding as to how protein and DNA structure mediate these interactions. To this end, I have developed electron paramagnetic resonance (EPR) methodology: 1) To measure precise point to point distances in DNA that can easily be related to the three-dimensional structure of DNA. 2) To enhance the affinity of a copper complex to modified Î±-helical sites in proteins in order to measure protein structure by EPR. By obtaining several distance constraints in protein as well as DNA, I will be able to generate a full 3-D structure of the copper regulation mechanism. Thus, my research will shed light on how to create new inhibitor in order to stop this regular mechanism in drug-resistant bacteria and consequently lead to the development of new antibiotics.

Ghoshal, Suryodoy *(Geology and Environmental Science)*
Room 527, noon–1 p.m.
Building a Viable Decollement Geometry for the Central Nepal Himalaya through Integrating Surface Geology, Thermochronology and Data from the 2015 Gorkha Earthquake

Recent field mapping in the Central Himalaya revealed a marked change in the location and orientation of exposed Greater Himalayan rocks around the epicenter of the April 2015 Gorkha earthquake, arguing for a lateral structure in the Main Himalayan Thrust (MHT). The earthquake provided new insight into the geometry of the MHT, but left the position and depth of the mid-crustal ramp in dispute. Combining new field data with existing thermochronometric data from the region emphasizes that both the mapped geology and young cooling ages step abruptly southward from east to west, immediately adjacent to the earthquake epicenter. The distribution of cooling ages is strongly influenced by the location of ramps in the decollement surface, as the vertical component of uplift concentrates exhumation over the ramp, producing the youngest ages there. We propose that the existence and location of frontal and lateral ramps can be evaluated using the regional distribution of thermochronometric ages.

Hildreth, A. Elizabeth *(Biological Sciences)*
Room 548, 10 a.m.–noon
Determining the Role of the Nucleosome DNA Entry-Exit Site in Transcription Termination in Saccharomyces cerevisiae

Eukaryotic genomes are tightly packaged by wrapping DNA around histone proteins, forming structures called nucleosomes. Transcription, the first step of gene expression, is controlled by factors that remove or modify nucleosomes, allowing RNA polymerase II to contact otherwise occluded DNA. The mechanisms by which this occurs are well understood in regard to transcription initiation and elongation. Despite a few studies showing that transcription-coupled histone modifications and chromatin remodelers are important for proper termination at some candidate genes, little else is known about the role of chromatin at this final termination step. We are further investigating this using Saccharomyces cerevisiae as a model. We have identified histone residues which, when mutated, cause defects in termination. Interestingly, many of these residues reside in or near the DNA entry-exit site of the nucleosome. This protein surface, including portions of histones H3 and H2A, is responsible for regulating the stability of the protein-DNA complex. Genome-wide analysis of our termination-defective histone mutants does indeed reveal altered nucleosome occupancy. RNA sequencing data from two of the H3 mutants reveals up- and down-regulation of many mRNA loci and terminator read-through of most Pol II

transcribed snoRNAs, likely explained by the altered nucleosome occupancy observed. In line with previous evidence that increased elongation rate is coupled to transcription read-through, we have also begun assessing Pol II elongation rate in our histone mutants. Together, data so far implicate the DNA entry-exit site as an important player in maintenance of chromatin structure that supports proper regulation of transcription.

Hill, Memphis *(Geology and Environmental Science)*
Room 548, 1–3 p.m.
Reconstruction of Legacy Metal Contamination Downwind of the Cradle of the Fossil Fuel Industrial Revolution

Human-driven landscape alteration has accelerated since the 19th century. Early industrial activities contaminated Western Pennsylvania soil and water, yet the history of industry metal deposition has not been well documented. The high spatial heterogeneity in contaminant deposition necessitates a large collection of sediment records to constrain the geochemical processes that control the deposition and distribution of metal contaminants. In this study, the history of legacy metal contamination is reconstructed from sediment cores with a focus on major and trace metal concentrations. Reconstruction of the metal deposition history in a sediment core collected from a lake near Pittsburgh reveals rapid and substantial shifts in metal content. Arsenic concentrations peak early, in the late 1800s, similar to other regional records observed near Donora, PA. In contrast, copper, cadmium, tungsten and lead all increase around 1930 and remain elevated through the remainder of the record. Long-term anthropogenic impacts are clarified by the increased spatial and temporal resolution of metal contamination allowed with reconstruction of sediment records.

Hou, Jialin *(Economics)*
Room 538, 10–11 a.m.
Do Divorce Laws Affect the Divorce Decision of Married Couples Differently than Yet-to-marry Singles?

I examine how married couples and yet-to-marry singles responded differently towards the US divorce law reform. I argue that different responses between the two groups of people caused the hump shape of the US divorce rate during the 1960-1980s. To develop the analysis, I first compute the divorce rate to be used in my analysis from the PSID, and provide descriptive empirical evidence supporting my hypothesis. I then develop and estimate a dynamic model of marriage and divorce characterizing three types of agents: the yet-to-marry singles, the married couples, and the divorcees. I find that the law reform resulted in a higher divorce probability for people who married before the reform and a lower divorce probability for people who married after it, whose combined effects generated the rise and fall of the divorce rate. I conclude that the introduction of unilateral divorce laws was a success: It improved value of marriage, and it did not promote the divorce rate of efficient marriages.

Howell, Brianna *(Political Science)*
Room 527, noon–1 p.m.
Trade and Party Strategy: Consensus and Contention

International trade was a salient topic during the 2016 presidential campaign in the US and a keystone of political debates throughout several other developed countries in recent years. Why is it that, after what seemed to be an elite consensus on free trade in these countries, we have recently seen an increasing opposition to it? In this paper, I attribute the increased salience of trade as the result of opposition partiesâ€™ electoral strategy to reframe trade as a nationalist social issue, instead of simply an economic one. By doing so, opposition parties are able to broaden the coalition of voters to which trade is salient beyond those who are directly negatively impacted by free trade policies (low wage, low skill workers). Specifically, I argue that mainstream political parties fail to take a clear position on trade because, since they are frequently in governing positions, they want to maintain the free trade status quo and the aggregate economic gains associated with it. As such, they have the incentive to avoid position taking on trade to keep it off the national agenda. Opposition parties then have the opportunity to put trade on the agenda by taking a strong, clear position on it and framing it as a nationalist social issue. This results in the increased salience of trade as a political issue. I test this argument using data on issue positions in party manifestos for 26 developed economies from 1990-2016.

Irizarry, Larissa *(Music)*
Room 539, 10–11 a.m.
Clémence's Lament: Processing Grief in L'amour de Loin

Kaija Saariaho's work has garnered feminist approval and is especially applauded for its woman centricity. With the growing interest in Saariaho's works, academic criticism of her first opera, *L'amour de loin*, has grown. Women in opera are notoriously composed via the male gaze, and consequently problematized by feminist criticism. Indeed, in the last act of this five-act opera, Clémence appears to be a one-dimensional character, a woman lamenting. This presentation will focus on the last scenes in *L'amour de loin*, in which Clémence attempts to rectify her worldview in order to alleviate the cognitive dissonance of her grief. This process will be analyzed in order to discern if Clémence perpetuates a problematic archetype of the lamenting woman in opera, or provides a new narrative. Throughout Clémence's journey of grief, she remains rational, acknowledges

the inconsistency of her worldview, but is unable to reconcile the cognitive dissonance created by the death of her beloved. She then succumbs to tradition and assumes blame for the tragedy. Clémence's self-blame and lament situate her within the tradition of lamenting women in opera. Although it may appear that Clémence chooses to act in bad faith, I argue that her use of subversive language and extended vocal techniques highlight her struggle to obtain freedom and agency. Clémence's struggle may represent where women-identified characters are in twenty-first century opera: they are able to articulate what equity looks like, they know that they should have agency, but it has yet to be included in their narrative.

Jang, Kyeongwoo *(Chemistry)*
Room 548, 1–3 p.m.
Chemoselective Phenylpyruvate Detection by Responsive Hydrogels

Toward development of fingerstick blood Phe sensors we developed 2D photonic crystals (2DPC) responsive hydrogels for the chemoselective detection of phenylpyruvate (PhPY), the enzymatic by-product of Phe produced by the enzyme phenylalanine dehydrogenase (PHD). The PhPY detecting hydrogels were fabricated via copolymerization reaction including the monomer tert-butyl(2-acrylamidoethoxy)carbamate (TAC), which contains a masked oxyamine functional group, and post-polymerization deprotection. The sensor response utilizes a molecular recognition event that covalently links PhPY to the sensing hydrogel via chemoselective reaction between hydrogel oxyamines and a ketone in PhPY to form an oxime. This change in the covalent hydrogel structure induces hydrogel osmotic pressures that cause volume changes related to the concentration of PhPY. The volume changes, in turn, shift the particle spacings of an embedded 2-D photonic crystal (2DPC), consisting of a monolayer of hexagonally ordered particles. The reaction of the sensing hydrogel with PhPY, and the resulting volume changes shift the vivid diffraction of visible light, giving rise to a convenient spectral readout that can be used to quantify the PhPY concentration. The PhPY sensing chemistry was characterized by NMR spectroscopy and 2DPC light diffraction measurements. The 2DPC hydrogels show a linear volume response to PhPY concentrations with an estimated limit of detection of 0.7 mM at a detection time of 15 min. The PhPY detecting 2DPC hydrogels are being utilized to measure enzymatically produced PhPY from Phe and PHD for the development of point-of-care blood Phe sensors.

Johnston, Kathryn *(Chemistry)*
Room 539, 11 a.m.–noon
Impacts of Broth Chemistry on Silver Ion Release, Surface Chemistry Composition, and Bacterial Cytotoxicity of Silver Nanoparticles

The surface chemistry of nanoparticles strongly influences their resulting chemical and physical properties, and therefore also significantly influences the utility of these materials in a wide range of applications. A first step in both understanding and leveraging nanoparticle surface chemistry is developing and implementing analytical methods to describe the chemical architectures present at the nanoparticle surface. Here, we compare the ligand exchange behaviors of silver nanoparticles synthesized in the presence of two different surface capping agents: poly(vinylpyrrolidone) (MW = 10 kDa or 40 kDa) or trisodium citrate, and under either ambient or low-oxygen conditions. In all cases, we find that the polymer capping agent exhibits features of a weakly bound ligand, producing better ligand exchange efficiencies with an incoming thiolated ligand compared to citrate and generating nanoparticles that are more susceptible to reactions with oxygen both during synthesis and ligand exchange. Using these well-characterized nanoparticles, we can begin to correlate surface chemistry with silver nanoparticle dissolution behavior in biologically-relevant environments. Specifically, we compare silver ion release in two canonical bacterial growth media, Mueller Hinton broth and Luria-Bertani broth, and show the significant influence of the broth components on the magnitude and timescale of that release. Taken together, these experiments should be important in the evaluation of silver nanoparticles in a variety of antimicrobial and industrial applications.

Kairalapova, Arailym *(Chemistry)*
Room 548, 1–3 p.m.
Non-Valence Correlation-Bound Anions

Anions that require correlation effects to be accounted for in order for the excess electron to be bound are referred to as non-valence correlation-bound (NVCB) anions. We study NVCB anions of various polycyclic aromatic hydrocarbons, water clusters, etc. We show that electrostatically bound anions can become correlation-bound provided sufficiently diffuse basis set and flexible methods.

Koch, Griffin *(Psychology)*
Room 548, 10 a.m.–noon
Perceptual and Conceptual Dimensions Impacting Animate Items in the Human Ventral Stream

The ventral stream of the human brain encodes multiple perceptual and conceptual dimensions for perceived items. Which

of these dimensions impact our visual system? We report a study examining these questions of neural representations for perceived animals. We recorded brain activity during a functional Magnetic Resonance Imaging (fMRI) scan from twenty participants as they were presented with images of twelve animals. The animals were selected to vary on a number of dimensions, including taxonomic group, real-world size, and prior familiarity. We apply multivariate analysis methods, including representational similarity analysis (RSA) and machine learning classifiers, to probe the distributed patterns of neural activity evoked by these presentations. We find that an animalâ€™s taxonomic group strongly influences how their multi-voxel activity patterns are in turn affected by other dimensions, within ventral temporal cortex. Further, we find that the reliability of neural patterns varies by conceptual dimensions. For example, images of birds showed less distinctive activity patterns than items from other categories such as insects and mammals. Additionally, we find greater dissimilarity for real-world size comparisons between large and small animals, than between similarly sized animals. Furthermore, we show that patterns of activation within the ventral temporal cortex can be a reliable predictor of dimensions such as familiarity. We examine and discuss how these findings affect existing theories of animacy and the organization of the ventral stream, as well as current views of the interaction between perceptual and conceptual neural processing.

Krueger, Kori *(Psychology)*
Room 548, 10 a.m.–noon
Perceiving Partner Responsiveness: The Role of Responsiveness Baselines

People often turn to others for support when they experience distress. Doing so has personal and interpersonal benefits particularly when people perceive that those others respond with caring, understanding, and validation; that is, when they behave responsively. Responsiveness has been heralded as a core construct in relationship science. However, relatively little is known about how people interpret their partner's responsiveness. Reis and Shaver's (1998) seminal model of intimacy development proposes that a partner's responses to one's disclosures pass through an "interpretive filter" that contains the disclose's needs, fears, and goals. But little work has explored this filtration process. In two studies, we examined whether perceptions of a partner's responsiveness baseline, "the partner's typical level of responsiveness to one's disclosures," would affect perceptions of that partner's situational responsiveness. Participants reported on their perceptions of their romantic partner's responsiveness baseline, imagined (S1, N = 120) or recalled (S2. N = 152) an instance of low or high responsiveness from their partner, and rated their perceptions of their partner's situational responsiveness. In the high (but not low) responsiveness condition, people with high-responsiveness-baseline partners perceived greater situational responsiveness than people with low-responsiveness-baseline partners. Participants also rated their perceptions of their partner's genuine communal concern (S2), the partner's level of concern about oneself and the relationship. Perceptions of genuine communal concern mediated the effect of responsiveness condition on perceptions of situational responsiveness, particularly for individuals with high-responsiveness-baseline partners. Thus, people's perceptions of a partner's responsive behavior appear to be shaped by their partner's responsiveness baseline.

Krueger, Kori *(Psychology)*
Room 527, 11 a.m.–noon
Romantically Committed on Facebook: Why Committed Individuals Represent Themselves Dyadically and With What Consequences

The advent of social media has created new opportunities and new challenges for relationship maintenance. Building on literature linking commitment with relationship maintenance processes (Rusbult, Agnew, & Arriaga, 2011), and emerging work suggesting that satisfied and committed people often represent themselves dyadically on Facebook (e.g., by posting dyadic profile photos; Saslow, Muise, Impett, & Dubin, 2012; Toma & Choi, 2015), we investigated why committed people might engage in such behaviors: because of their motivation to protect their relationship from threats and/or because of their relationship identification. We also examined the consequences of dyadic-representation behaviors. In Study 1, romantically-involved Facebook users (N = 221) reported on their dyadic-representation behaviors (e.g., profile photo includes partner?; proportion of status updates mentioning partner?) and completed measures of motivation to protect the relationship and of relationship identification. SEM analyses revealed that commitment positively predicted dyadic-representation and that the motivation to protect the relationship mediated this effect, whereas relationship identification did not. Study 2 examined the consequences of dyadic-representation behaviors experimentally. Facebook users (N = 224) were randomly assigned to view a target's Facebook profile with or without dyadic-representation signals and reported on their perceptions of the target. The dyadic-representation profile target (vs. no-dyadic-representation profile target) was perceived as more committed to his/her relationship and less receptive to romantic advances from others. Thus, committed people may use dyadic-representation behaviors on Facebook to signal their commitment and discourage threats to their current relationship and these behaviors do affect others' perceptions of their commitment and romantic receptiveness.

ABSTRACTS (In alphabetical order)

LaVoice, Jessica *(Economics)*
Room 539, 10–11 a.m.
The Effects of Urban Renewal and Slum Clearance on Neighborhood Outcomes

Segregation has been shown to cause many negative outcomes. Since segregation is still a salient feature of every major urban area within the United States, it is important to assess the government's role in shaping the demographic and economic structure of cities. There is a large debate about the magnitude of government actions, as opposed to individual preferences, on the current state of residential racial and economic patterns within U.S. cities. Examples of government policies believed to have shaped the demographic structure within U.S. cities in ways that strategically promoted segregation include redlining and discriminatory zoning. This paper contributes to this debate by analyzing the federal urban renewal and slum clearance program enacted by the Housing Act of 1949. I examine the characteristics of neighborhoods cleared for redevelopment and the effect that redevelopment projects had on these neighborhoods over the long-run. Controlling for the fact that treated neighborhoods had lower median incomes, a higher percentage of substandard and vacant units, and an aging housing stock, I find that minority neighborhoods were more likely to be cleared and redeveloped. I also find that redevelopment caused a persistent decline in both the overall population density and the percentage of the population that is black in directly treated neighborhoods. These neighborhoods also experienced an increase in median rents, median housing values, and median incomes.

Liu, Yu *(Statistics)*
Room 548, 10 a.m.–noon
Minimax Estimation of Large Precision Matrices with Bandable Cholesky Factor

This paper considers the estimation of the high dimensional precision matrices. We focus on the two commonly used parameter spaces with the banding structure on the Cholesky factor of precision matrices. These parameter spaces are of great importance in practice, such as in meteorology and spectroscopy. However, the minimax theory has not been fully established. We develop the optimal rates of convergence under both the operator norm and Frobenius norm. The rates on these two parameter spaces reveal a fundamental distinction in estimating precision matrices with bandable Cholesky factor from bandable covariance matrices. The lower bounds are constructed via a careful selection in parameter spaces using the Le Cam and Assouad methods. The optimal procedure is based on a novel optimal estimator of the diagonal submatrix of precision matrix. In the end, we provide a numerical study to illustrate the performance of this approach.

Lockwood, Kimberly *(Psychology)*
Room 538, 11 a.m.–noon
Systemic Inflammation as a Pathway from Perceived Discrimination to Ambulatory Cardiovascular Activity in Healthy Midlife Adults

Perceived discrimination associates with risk factors for cardiovascular disease, including elevated blood pressure (BP) and heart rate (HR). One possible pathway linking perceived discrimination with BP and HR is systemic inflammation. Here, we tested two mediation models to examine whether 1) the inflammatory marker interleukin(IL)-6 explained the association between perceived discrimination and ambulatory BP or HR, or if 2) BP or HR explained the relationship between discrimination and IL-6. Participants were 459 healthy midlife adults from the Adult Health and Behavior project. Participants completed the Perceived Ethnic Discrimination Questionnaire (PEDQ-CV), 4 days of ambulatory cardiovascular monitoring, and a blood draw for circulating IL-6. BP and HR were averaged over the monitoring period. Participants were divided into 3 groups: No, Moderate, and High Discrimination. ANOVAs controlling for age, sex, race, and BMI showed IL-6 and HR to differ by discrimination (IL-6: $F=3.484$, $p=.03$; HR: $F=4.89$, $p=.01$), with higher IL-6 and HR in the High Discrimination group. Race did not moderate the effect. Similar effects were initially seen for BP, but attenuated after covariate adjustment. Mediation tests revealed an indirect effect of discrimination on HR via IL-6, $b=0.70$, 95% CI[.32-1.30], which remained significant after adjusting for age, sex, race, BMI, smoking, hostility, and depression. Alternate models with HR as the mediator and IL-6 as the outcome were initially significant $b=0.06$, 95% CI[.03-.09], but nonsignificant after covariate adjustment. In sum, systemic inflammation may be a physiological pathway linking perceived discrimination with HR. Future longitudinal work is needed to further test this inflammatory pathway.

Lombard, Jacqueline *(History of Art and Architecture)*
Room 527, 1–2 p.m.
Hidden in Plain Sight: Using Medieval Currency to See Race as a Medieval Viewer

Tucked within the Image of the Black in Western Art Archive is a series of coins from twelfth-century Magdeburg. The coins all feature Saint Maurice, the first known saint within European Christianity to be recognized as a black African. Each coin offers a unique depiction of the saint: some feature curly hair, or a helmet, some have thicker lips, or thin lips, a broader nose, or no apparent nose at all. While some appear to actively depict Maurice as black, others remain so vague that the saint can only be recognized through the image's neighboring inscription. While the thirteenth-century sculpture of Maurice in Magdeburg Cathedral has been heralded as the first depiction of Maurice as

a black African, these coins predate the sculpture by a century. By approaching these coins as a modern viewer, searching for his race through physiognomic clues or skin color, the coins appear ambiguous at best and unintentionally varied at worst. Yet for the twelfth-century artist, modern cues for signaling racial identity such as color or facial features were often disregarded in favor of other signs such as dress, inscription, or context. These coins illuminate a major transitional period in medieval art, wherein artists began to reconcile these existing medieval visual codes and standards of beauty with an increasing interest in visualizing human diversity. By comparing these coins to other medieval images and texts, this paper will offer new insight into the deeply nuanced ways in which race was understood and articulated in pre-modern Europe.

Long, TiMar *(Sociology)*
Room 527, 2–3 p.m.
Sacrilege: The Use of Religion in Porn

This paper examines the way in which religious women are used in pornography, namely how their religious attire, such as a nun's habit or Muslim woman's hijab, are sexualized and represented in porn. To investigate this relationship, I examine two specific forms of religious porn, Catholic nun porn and Muslim hijab porn found on the online porn sites of Pornhub.com and Xvideo.com. By examining hardcore pornographic videos I find that religious garb works as an identifying marker for the women involved in the pornographic scenes. Such garb would normally mark them as distinctly off limits for sexualization in normal settings but becomes a fetish in pornographic videos. Furthermore, differences developed in the ways in which nuns were treated and the ways in which Muslim women were treated. These differences speak to possible anxieties that exist about the role of Christian and Muslim women in modern society. With that in mind, Islamic women were shown to be more submissive than their Catholic counterparts, oftentimes to white, English-speaking men.

Martin, Lea *(Psychology)*
Room 548, 10 a.m.–noon
Reading an Artificial Orthography Results in Left Visual Word Form Area Activation

The visual word form area (VWFA) is a left-lateralized region in visual association cortex. It responds preferentially to orthographic as compared to non-orthographic stimuli (Cohen & Dehaene, 2004). There is some debate as to whether the VWFA responds to the perceptual features of written language (visuo-spatial account) or if it is positioned to connect visual input with aspects of spoken language (linguistic bridge account). The current study pitted these accounts against each other, by training subjects to read an artificial HouseFont alphabet. In HouseFont, house images serve as letters that represent spoken English, with each image mapped to a specific phoneme. Twelve participants underwent a two-week training protocol to establish basic HouseFont reading proficiency. Functional neuroimaging data were collected while subjects viewed printed HouseFont words and control stimuli. The primary analyses focused on three regions identified by a localizer protocol prior to HouseFont training: the VWFA and the left and right parahippocampal place area (PPA). Significant pre- versus post-training increases in the response to HouseFont was observed in the VWFA, while no effect of training was observed in the left and right PPA. These results are consistent with behavioral and neuroimaging findings from our previous work which focused on the role of the VWFA in reading an artificial, alphabetic orthography comprised of faces, FaceFont (Moore, et al, 2014). Together, the body of findings supports the linguistic bridge account of VWFA specialization while also suggesting that the VWFA is not restricted to using traditional orthographic forms as graphemes.

Martin, Lea *(Psychology)*
Room 548, 10 a.m.–noon
Lingering over Smoking Cues can be Pleasant: Can Behavioral Tasks Inform fMRI Data during Positive Anticipatory Cravings?

Understanding the cognitive and motivational dimensions of craving has been a focus of both behavioral and brain imaging studies. While most work has centered on the negative affect linked to unrequited craving, positive affect also has been related to craving (e.g., when smokers anticipate smoking soon). That is, in some cases craving (and exposure to smoking cues) itself may be satisfying—and perhaps even more satisfying than smoking per se. Brain imaging data suggest that opportunity to smoke is related to increased cue-related connectivity among regions implicated in cognitive control and motivation in active smokers, which may reflect cognitive processing linked to savoring the moment of anticipation. We recently reported that under certain conditions, Ps find viewing smoking cues in themselves to be pleasant. Male and female abstinent smokers (N=227) with or without a current interest in quitting (Status) were told they would or would not be able to smoke soon (Allow). Ps rated a series of advertising images pertaining to either smoking or drinking (interspersed) purportedly to be used in a future study. Ps viewed each image (piloted to be similarly pleasant) as long as they wished (TIME) and rated the pleasantness (PLEASANT) of each image using a 1-9 scale. Here we probe further by determining whether being allowed to smoke would lead to a link between TIME and PLEASANTNESS, which we expected would be significantly positive only for Ps who might savor viewing the smoking images. Controlling for status, we computed a pair of partial correlations between TIME and PLEASANTNESS, finding a correlation between the two variables only when Ps were allowed to smoke during the study: ALLOW condition [r(113)= .24, p

<.01; NOT ALLOW r(114) = .02, p = .81. A conservative (2-tailed) Fisher Z contrast revealed a marginally significant difference between these two partial correlations (p <.10). Findings reinforce the idea that cognitive (attentional) processes and the enjoyment of drug cues are linked during positive anticipatory craving, a connection that can be further illuminated by using behavioral data to test predictions derived from neurobiological models.

Maxim, Alexandra *(Geology and Environmental Science)*
Room 527, 11 a.m.–noon
Heavy Metal Contamination in Hazelwood, Pittsburgh

Urban environments have elevated heavy metal concentrations due to increased traffic, railroad transport and pollution. Pittsburgh's industrial history has led to a widespread metal contamination in the soil and air. Hazelwood sits in a part of Pittsburgh that has been exposed to this historical pollution. The two main sources of pollution will be the emissions from the railway and the historical coke ovens. The likely heavy metal pollutants from railways will be lead (Pb), zinc (Zn), and cadmium (Cd). Thus, the samples taken from near the railways should have high concentrations of those heavy metals. In contrast, coke ovens emit a gas and dust mixture that contains arsenic (As) and cadmium (Cd). Since, this mixture most likely was deposited over a wider area, it is likely these metals from coking will be elevated in most samples from Hazelwood. This project aims to answer the following: (1) which heavy metal pollutants are evident in the soil in this portion of Hazelwood? (2) what is their prevalence? and (3) what are their sources?

McClymonds, Daniel *(Sociology)*
Room 538, 1–2 p.m.
When Garden Clubs Revitalize Neighborhoods: Social Dislocations and Civic Repertoires

Social scientists have identified a sea change in civic organizing in the US over last 60 years. Since the mid-20th century, an older model of civic organizing has steadily given way to a new one. Researchers ask: how have changing economic conditions driven this civic sea change? Recent answers emphasize the role of labor markets and their control over which segments of the population have the will and ability to participate in civic organizations. As those segments become smaller and more educated, they favor the more professionally run, new model of organizations. By contrast, I contend that market-driven social dislocations have inspired organizations to develop new civic repertoires. To develop these new repertoires, they have relied on the new model of civic organizing. To test these hypotheses, I use comparative historical analysis to examine a case of neighborhood decline in Pittsburgh's Central North Side between late 1960s and early 2000s. Two civic endeavors emerged to revitalize the neighborhood, and while one thrived the other struggled. My study asks whether we can better explain these organizations' different outcomes by considering the number and social background of available participants or by considering the effectiveness of different civic repertoires. My study finds strong support for my hypothesis that market-driven social dislocations have inspired organizations to develop new civic repertoires, and it also finds partial support but also partial complications for the rival hypothesis.

McQueen, Eden *(Biological Sciences)*
Room 548, 10 a.m.–noon
A Gene Network Responsible for a Male Genital Structure Also Patterns a Potentially Coevolving Female Genital Trait

How morphologies arise and evolve is a fundamental question in evolutionary biology. Animal genitalia frequently possess derived features, and it is common to see interspecific differences in both male and female genital structures. When genital features of females and males are morphometrically correlated across species, the relationship is usually assumed to be driven by selective mechanisms. An oft-overlooked explanation for concurrent structural changes is pleiotropic linkage. The degree to which coevolving genital structures are genetically independent has not been elucidated in any species. We investigated the genetic underpinnings of two genital structures, one male and one female, in the Drosophila melanogaster subgroup. These two male and female features correlate in size across species, suggesting a coevolutionary relationship. A genetic network required for the formation of the male structure was determined in a previous study. Using gene knockdown, in-situ hybridization, antibody staining, and enhancer analysis, we investigated whether this network is shared between the male and female structures. Surprisingly, we discovered that patterning genes from the network of the male structure, and even the enhancers of these genes, are also involved in the developmental patterning of the female structure. These data suggest that shared genetic programming could in part explain the observed size correlation of these structures across species. This work highlights the need to consider the role of pleiotropy in coevolutionary relationships between the sexes.

Mitra, Sunayana *(Chemistry)*
Room 548, 10 a.m.–noon
Kinetics of Proton Transfer in Protic Ionic Liquids

Protic ionic liquids (PILs) are molten salts of BrÃ¸nsted acid and BrÃ¸nsted base at room temperature. Promising characteristics of PILs like high thermal stability, low vapour pressure, high proton conductance and â€œwater-likeâ€ hydrogen-bonding make them favorable candidates for next generation fuel cells.

A question that still needs addressing is the mechanism of proton transport in PILs. Our hypothesis is that proton transfer in PILs undergo proton hopping called Grotthuss mechanism of transport. A photoacid, 8-hydroxypyrene-1,3,6-trisulfonic acid (HPTS), transfers a proton on a ps timescale when electronically excited with 400 nm light. With Time-Resolved Multiple-Probe Spectroscopy (TRMPS), the rise of the formic acid band in ethylammonium formate (EAF) indicates proton transfer from the photoacid in a PIL. The kinetic modelling of HPTS, HPTS*, PTS-*, PTS- and formic acid IR bands will elucidate proton transfer dynamics in PILs through a Grotthuss mechanism. A clear mechanistic picture of proton transport will help advancement in development and application of PILs for chemical synthesis and proton conducting electrolytes.

Mukherjee, Silpa *(Film and Media Studies)*
Room 538, 1–2 p.m.
"Unbelievable Victory for Isis, Shitty Camera Work for Us:" Deep Web, Visibilizing Death and Orphan Videos of Torture

This paper interrogates taboo and transgressive videos of execution on the web, specifically a few videos of ISIS beheadings in Syria uploaded by a prolific user under the name Vincit Omnia Veritas on bestgore.com. The videos with comments and hyperlinks highlight a spectacular visibility and overexposure of violent death. Although bestgore.com in itself is a quasi-illegitimate space of the web, it makes claims of being a media watchdog revealing what mainstream media obscures from the public eye. Bestgore.com as an archive of documentary death footage is productive in staging a debate about secrecy in the war machine and deep web. These hypervisible killings add to the discourse of indexicality and fascination for snuff films. I will draw on Virilio's logic of the "aesthetics of disappearance" to read the perceptual alterations conjured by these orphan videos stacked in some recess of the deep web. The structure of the deep web which bolsters bestgore will be read using the concept of forensic architecture. Is bestgore.com an extraterrestrial zone, a rogue sector of the web where orphan video files are uploaded by someone to be viewed and interacted with in a community of consenting adults?
The videos will play witness to a possible relation between violent events and media objects arousing the frisson of shock and sensation simultaneously. The ISIS beheading videos will open a dialogue with contemporary war machine which obliterates all signs of physical combat, sublimating warfare to the "visionics" of screens and representation.

Nonnenmacher, Sean *(Linguistics)*
Room 548, 1–3 p.m.
Linguistic Insurgency: Online Queer and Trans Youth Discourse

This study assesses the language practices and associated layers of indexical meaning of queer- and trans-identified youth in online spaces. Q/TI youth gravitate to online spaces because of their ability to facilitate fast and easy connections with others who present virtually as embodying similar real-world experiences. Within online spaces, Q/TI youth are exploring nuanced subjectivities, as well as refining or challenging adult understandings of what it means to be "trans" or "queer." Online forms of engagement may present spaces for open and (at least initially) anonymous conversation about topics with significant real-world implications: relationships (whether sexual, romantic, or platonic), coming out to friends and family, and local or national political activism. Online spaces also allow users to express themselves creatively through the (re-)appropriation of popular cultural icons in the form of memes and GIFs, whose success often depends on the effective deployment of linguistic play. Through a survey of online discourse (broadly defined) anchored by my own online and offline conversations with Q/TI youth, I will demonstrate how Q/TI young people are (1) building a new terminology to describe their experiences that is not necessarily legible to the broader population of LGBT adults, (2) developing extensive virtual networks calibrated to their own specific experiences (as asexual/ace or demisexual/demi, for instance), and (3) forming layers of circulating indexical meaning around terminology and their constructed social worlds. Thus, Q/TI youth might be considered linguistic insurgents of historically defined queer and trans ways of being.

Norberg, Kole *(Psychology)*
Room 548, 1–3 p.m.
Adversative Connectives' Effect on Recognition Memory

Adversative connectives, words such as "but," "however," and "instead," have been shown to decrease reading times and increase online reactivation of information from previous clauses (Millis & Just, 1994). We hypothesize that recognition memory for the reactivated information will be greater following an adversative connective. Across conditions, participants read stories which contained (a) an adversative connective, (b) a temporal connective (controlling for connective use in general), or (c) no connective. Initial results show no significant relationship between connectives and later recognition memory performance; however, subsequent analysis of the items suggests that the connectives could have been drawing readers attention to aspects of the sentence other than the intended contrasts. We discuss future directions, including the creation and norming of a new stimulus set.

ABSTRACTS (In alphabetical order)

Olmstead, Amanda *(Theatre Arts)*
Room 539, 10–11 a.m.
Développé: Katherine Dunham's Diasporic Dance

This piece focuses on the dance style and methodology developed by Katherine Dunham combining African diasporic dance traditions with Eurocentric dance traditions. Dunham was able to use this new choreographic technique to subvert the white-patriarchal gaze and create a space that forever changed the Broadway stage. In the early 1930s, she traveled to the Caribbean to complete ethnographic research on African-rooted dance styles on the islands. She was then able to bring these back to the United States and slowly integrate them into the choreography for her concert dance piece La'Ag'ya 1938, and her choreography for the hit musicals Pins and Needles 1940 and Cabin in the Sky 1940. Her innovation discovered and exploited the possibilities for subversion or transgression within dance using a hybrid movement style performed by black bodies in order to create an opportunity for an authentic black musical theatre.

Omer, Humair *(Chemistry)*
Room 527, 10–11 a.m.
Computational Studies of Ni Catalyzed C-H Functionalization Reactions

The mechanisms of Ni-catalyzed C–H arylation, alkylation, and sulfenylation with N,N-bidentate directing groups are investigated using density functional theory (DFT) calculations. While the C–H cleavage occurs via the concerted metalation-deprotonation (CMD) mechanism in all types of reactions, the subsequent C–C and C–X bond formation steps may occur via either oxidative addition to form a Ni(IV) intermediate or radical pathways involving Ni(III) complexes generated from homolytic dissociation of disulfides/peroxides or halide-atom transfer from alkyl halides. DFT calculations revealed that radical mechanisms are preferred in reactions with sterically hindered coupling partners with relatively low bond dissociation energies (BDE) such as dicumyl peroxide, heptafluoroisopropyl iodide and diphenyl disulfide. In contrast, these radical processes are highly disfavored when generating unstable phenyl and primary alkyl radicals. In such cases, the reaction proceeds via an oxidative addition/reductive elimination mechanism involving a Ni(IV) intermediate. These theoretical insights into the substrate-controlled mechanisms in the C–H functionalizations were employed to investigate a number of experimental phenomena including substituent effects on reactivity, chemo- and regioselectivity and the effects of oxidant in the intermolecular oxidative C–H/C–H coupling reactions.

Pina, Jason *(Mathematics)*
Room 538, 1–2 p.m.
Temporally Varying Neural Responses to Spatially Periodic Stimuli

Just as sounds can be analyzed in terms of the contributions of different frequencies (pitches), images may be decomposed into their spatial frequencies. Images with dominant components within a narrow band of spatial frequencies have been shown to induce temporally varying neural responses. For example, in pattern-sensitive epilepsy, striped lines can trigger epileptic seizures if the stripes are close to 3 cycles per degree. Similarly, images—including abstract artwork—with strong contributions by spatial frequencies near 3 cycles per degree are known to cause aversion in healthy individuals. Both of these phenomena have been shown to induce abnormal temporal activity in electroencephalography (EEG) or magnetoencephalograhy (MEG) recordings. We are thus motivated to model this strong sensitivity to certain spatial frequencies within an analytically tractable framework. Mean-field descriptions of neurons known as neural fields have proven useful at modeling the spatiotemporal dynamics of ensembles of neurons and capturing many experimentally observed patterns, such as waves in cortex. Using a spatially-extended neural field model, we can capture the desired spatial resonance by choosing parameters such that the model maintains a spatially uniform baseline steady state with no stimulus, but exhibits temporally and spatially periodic patterns with stimuli that are near a critical spatial frequency. Our results suggest that different parameter values involving, for example, the connection strengths between neurons, could cause neuronal networks to exhibit a natural sensitivity to particular spatial frequencies, as observed with aversive images and in pattern-sensitive epilepsy.

Pisabarro, Silvia *(Linguistics)*
Room 548, 10 a.m.–noon
Developing Sociolinguistic Competence through Explicit Instruction: The Case of Future-Time Expression in L2 Spanish

Futurity is an interesting test-case for the acquisition of variation in Spanish since it can be expressed through morphological future irá, periphrastic future voy a ir, and present indicative voy. Although recent work has considered to what extent learners use these forms in variable contexts (Gudmestad & Geeslin, 2013; Kanwit, 2017; Solon & Kanwit, 2013), research in this vein has not included pedagogical interventions, despite recent calls for instruction on sociolinguistic variation (Geeslin with Long, 2014; Gutiérrez & Fairclough, 2009). The present study investigates the development of sociolinguistic competence (Canale & Swain, 1980) of two Spanish classes through an intervention in which students received instruction regarding general trends of future-time forms and the effects of independent variables (i.e., geographic region, temporal distance, and the presence of

temporal adverbs). Data were collected from an instructional and a control group at four points throughout a semester: a pre-test, an immediate posttest, and two delayed posttests. Participants completed a contextualized preference task and a written production task that systematically manipulated temporal distance (immediate, intermediate, distant), the presence of adverbs, and the origin of the interlocutor (Colombia or Spain).
Results indicate that students in the instruction group demonstrated more target-like sensitivity to independent linguistic and social factors across both tasks than those in the control group and that gains were maintained across both post-tests, although the instruction group generally demonstrated greater sensitivity on the preference task than the production instrument.

Plakke, Melissa *(Biological Sciences)*
Room 538, 2–3 p.m.
Protease Characterization and Specificity in the Reproductive Tract of Female Butterflies

Coevolution between the sexes may potentially lead to the rapid divergence of the corresponding reproductive proteins. While male reproductive trait diversity has been heavily explored, little is known about the biochemistry of female reproductive trait diversity and function. Female butterflies have a specialized reproductive organ called the bursa copulatrix which receives and processes the proteinaceous male ejaculate, termed spermatophore. In the Cabbage White butterfly, Pieris rapae, the bursa contains a mixture of proteases hypothesized to digest the spermatophore. However, these proteases remain biochemically uncharacterized. Here, we assessed the activity and specificity of these bursal enzymes following their exposure to a panel of diagnostic protease inhibitors. We identified two main classes of proteases actively involved in the digestion process and found that a serine specific inhibitor failed to reduce their proteolytic activity. However, a cysteine specific inhibitor resulted in decreased activity, matching predictions based off of docking simulations between predicted structures of these enzymes and of the protease inhibitors, suggesting a potential consequence of bursal proteases interacting and coevolving with rapidly evolving spermatophore proteins.

Primack, Alvin *(Communication)*
Room 538, 10–11 a.m.
Inter(s)expertise: A Circumferential-Rhetorical Approach to Examining the Scholar-Activism of the Intersex Rights Movement

Medical professionals continually situate themselves as authority figures of sexed bodies through regularized performances of medical expertise. These performances are part of a rhetorical process wherein experts endeavor to claim "ownership and legitimacy" over patients' bodies (Hartelius, 2010). Part of situating oneself as an expert involves enacting expertise "appropriately." This includes reading medical literature as a means of learning professional scripts. One repertoire medical professionals adopt from professional literature includes the dramatization of intersex bodies as sites of emergency. Through such dramatization, medical professionals persuade parents to defer authority over intersex infants' bodies to enable a series of acts. These acts often involve the performance of normalizing cosmetic genital surgeries on intersex infants' bodies. Intersex Rights Movement scholar-activists strive to rescript these performances by producing academic discourse. I argue that examining the processes whereby these scripts of expertise are generated and modified is vital to queer world making. A central aspect of queer world making is understanding the relationship between flows of information and the production of knowledge about sexed bodies in the constitution of discourse communities (Berlant and Warner, 1998; Rawson, 2014). Drawing from Damien Pfister's (2014) work on expertise and networked rhetoric, I perform a circumferential analysis which alternates between scales of phenomena - moving between distant analysis of 186 texts, and a close reading of two texts, to observe the relationship between the structure of an intersex research network and the writing and research practices which are co-constitutive of it.

Robinson, Candice *(Sociology)*
Room 539, 11 a.m.–noon
Class Differences in Altruism and Prosocial Behaviors Among Black Americans

Du Bois argued at the turn of the 20th century, "the Negro race, like all races, is going to be saved by its exceptional men" (Du Bois 1903). These exceptional men, the talented tenth, will uplift those without the privilege of education by setting altruistic attitudes for the black community. This article assesses whether the talented tenth, contemporarily known as the black middle class, has fulfilled their responsibilities as first described by Du Bois. Using the Educational Longitudinal Study of 2002 (ELS:2002) restricted to non-Hispanic black American millennials, I contend that there are distinct within race, class differences among blacks in reference to altruistic attitudes and prosocial behaviors. The findings show that the black middle class has higher rates of volunteering compared to working class blacks and working-class blacks have higher rates of altruistic attitudes. This work speaks to the literatures of race, sociology of morality, and social movements by centering the black middle class as a way to understand civic engagement.

Schneider, Joshua *(Psychology)*
Room 548, 10 a.m.–noon
Object Exploration & Play in Tajikistan

In the first two years, infants show remarkable advances in object interaction. In Western infants, developmental progressions in

object exploration are well documented. Infants advance from visual inspection, to simple manual contact, to more complex actions tailored to object features. However, few studies have described this developmental progression in infants reared in other cultures. We examined visual-manual exploration in 97 8- to 24-month-olds in Tajikistan, raised in a "gahvora" cradle from birth. The gahvora constrains infants' posture, limbs, and movement, limits visual input, and may influence how infants explore objects. Infants spent M = 11.00 hours/day in the cradle (range 0-21 hours). First, we analyzed the development of object actions during two minutes of structured play with a novel "busy-cube." We scored global actions on the object (mouthing, banging) and tailored actions unique to object properties (using fingers to push bead along spiral path). Infantsâ€™ actions varied widely within age and increased across age. Global actions remained consistent; tailored actions increased with age. Second, we asked about object engagement during spontaneous activities (M = 43.5 minutes) out of the gahvora. We are currently examining the number and types of objects with which infants interact. Preliminary findings show infants in manual contact with objects for M = 50.8% of their observation "similar to Western infants" and with different types of objects (M = 4.1) including natural kinds (twigs, pebbles) and artifacts (utensils, toys). This cross-cultural research will offer new insights into and broaden current accounts of infant development.

Schwartz, Laura *(Music)*
Room 539, 11 a.m.–noon
Confessions from the Killing Jar: "Coming-out" as Reclamation

In her 2017 American Musicological Society endowed lecture, Susan McClary compared the conclusion of Kate Soper's dissertation to McClary's own experience of having to "come out" as a woman in the field of musicology. Soper described writing *Voices from the Killing Jar* (2010-2012) as a coming-out of herself as a gendered person and a reclaiming of tragic literary woman's selfhood. In voicing tragic woman, I argue that Soper performs her own voice. In Voices from the Killing, Soper reclamations her gender and narratives of tragic woman through a crafted confession. Soper's crafted confession follows Chloe Taylor's interpretation of the Foucauldian model of confession. These four steps: declared acknowledgement of truth, commitment to truth, self-exposure/vulnerability, and significant change, are the formal structure of my presentation. I apply Taylor's interpretation directly to movement VI. Interlude: Asta Sollilja. Interlude focuses on the reality of Asta Sollilja— a tragic character from Harold Laxness's Independent People. Soper's music sonically forms Asta Sollilja away from her killing jar —nineteenth-century rural Iceland and anxiety. In Interlude, Soper composes an expanded representation Asta Sollilja. In performing as Asta Sollilja, Soper directly embodies her gender. In a formalist analysis of Soper's recording of Interlude, I argue that Soper uses sonic confessional intimacies, such as a broken ground bass, vocal failure, and phrase repetition. In my paper, sonic confessional intimacies are directly tied to a lament tradition. I examine how using a historically informed confessional intimacy constructs Soper's double reclamation of her gender and of the portrayal of tragic woman.

Sequeira, Stefanie *(Psychology)*
Room 538, 1–2 p.m.
Neural Predictors of Treatment Response in Anxious Youth

Anxiety disorders are among the most prevalent mental disorders in childhood and adolescence and are associated with significant impairment in social and academic domains. Although efficacious treatments, like cognitive-behavioral therapy (CBT), do exist, only around one-half to two-thirds of youth with anxiety disorders respond to these treatments. However, it is still unclear why so many youths do not respond to treatment. The recent, rapid expansion of fMRI in clinical science has helped shed light on potential neural markers that differentiate treatment responders from non-responders. In anxious youth, this work has focused almost exclusively on how threat-related neural circuitry predicts treatment response. Given the central role of tangible rewards (e.g., stickers) and social rewards (e.g., praise) in treatments for anxiety disorders, this study aimed to examine whether reward-related neural circuitry prior to treatment predicts response to treatment. Specifically, we hypothesized that anxious youth with greater activation in reward-related brain regions would be more likely to respond to treatment. Participants (72 anxious youths aged 9-14 years) completed a monetary reward task in the MRI scanner before beginning 16 sessions of therapy. We found that, compared to treatment non-responders, youth who responded to treatment had greater activation in the ventral striatum, a key region implicated in reward responsivity, as well as a more negative coupling between the ventral striatum and the lateral prefrontal cortex, which may reflect less regulation of the initial reward response. Findings have important implications for understanding why some youth respond better to therapy than others.

Shao, Huiling *(Chemistry)*
Room 548, 1–3 p.m.
Computational Study of Photo- and Redox-switchable Ring-Opening Metathesis Polymerization and Ring Closing Metathesis

This project studies the ring-opening metathesis polymerization (ROMP) reaction. This reaction produces polymers and co-polymers from cyclic olefins such as cyclooctdiene and norbornene derivatives. ROMP catalysis has been widely used in industry for polymer produce. To further exploit the potential of

ROMP, one novel approach is to design a switchable catalyst to achieve tailored microstructure of the polymer. In collaboration with Christopher Bielawski research group, we conducted a series of calculations study the reaction mechanism of ROMP of cyclooctdiene and norbornene with the second generation Hoveyda-Grubbs catalysts bearing photo- and redox-switchable N-heterocyclic carbene ligands. These catalysts are capable of undergoing reversible transformation between two different states in response to external stimuli such as light and redox reagents. In other word, one will be able to control the state of the catalyst by changing light condition or adding redox reagent to the reaction mixture, which will later lead to a change in reaction outcome. To gain a thorough understanding of the principle factors contribute to this extraordinary multitasking catalyst, our group performed density functional theory calculations to investigate the reaction mechanisms as well as the effects of switchable ligands on reactivity. The computational results suggested the reactivity of the switchable catalysts depends on not only the electronic and steric properties of the ligand, but also the nature of the rate-determining step.

Sherman, Ashley *(Music)*
Room 527, noon–1 p.m.
Lament and Grieving: Human Vocality in the Oboe in 20th Century Solo Oboe Repertoire

Among the solo repertoire for the oboe, certain pieces and movements stand out as particularly grief-driven, calling upon the topic of lament. These works utilize the emotive power of the oboe as an instrument and replicator of the human voice to demonstrate the depth of life-shattering sorrow expressed through the music. Benjamin Britten's movement "Niobe" from *Six Metamorphoses after Ovid*, op. 49 (1951) is named after the Greek mythological character who brought death upon her children through her hubris. These much-beloved pieces provide the performer with opportunities to excessively emote to the audience, drawing out sympathetic feelings of pain and sorrow, grief and anger. This paper investigates the use of the lament topic through an analysis of the music as well as through social and psychological understandings of grief as written by Judith Butler and Elisabeth Kübler-Ross. It seeks to foster an understanding of how the oboe is used idiomatically by the composer and performer to recreate feelings of utter despair, only to then transform away from absolute desolation to acceptance. In-depth analyses provide a foundation for this paper to build upon, combining with musicological writings about the genre and topic of lament and its social and political function to enrich our understanding of two pieces of the canon of oboe solo repertoire standards and the manner in which the oboe acts as a mediator between the audience and the raw human voice.

Smith, Sarah *(Biological Sciences)*
Room 539, 11 a.m.–noon
From Code to Shape: Investigating the Link between Genes and the Formation of an Anatomical Structure

A major question in biology is focused on how our genes code for the diverse anatomical shapes found throughout the body. There are two classic ways this question has been addressed. The first is by examining how genes are spatially and temporally turned on to pattern the development of a structure. The second way is by investigating how effector molecules physically alter the shape of cells, generating a tissue's final architecture. However, these two fields of research are rarely connected experimentally. It is critical that we comprehend how patterning by genes and cell shape changes are connected in order to understand how our genes control the shape of anatomical structure. To do this we are examining how an anatomical structure called the posterior lobe on the model species D. melanogaster (fruit fly) forms. We have determined how an important gene required for formation of the posterior lobe is turned on during posterior lobe formation and are beginning to connect this genes activity to the activation cellular effectors. These cellular effectors are responsible for restructuring the cytoskeletal components of the cells that form the posterior lobe in order to elongate them and form the final adult structure.

Spinner, Codee *(Music)*
Room 538, 11 a.m.–noon
Shifting Time and Reality: Narrative and Meta-Opera in John Corigliano's The Ghosts of Versailles

Temporality is often a key component of narrative. A linear narrative allows the actions to be laid out in a straight-forward and coherent manner. Artistic mediums—opera in particular—are just one way in which to perform a narrative while disrupting and modifying the temporality of linear structure. An example of temporal complication occurs in John Corigliano's 1991 opera, *The Ghosts of Versailles*. The opera takes place in three different temporalities; a ghostly world in the present, an onstage dramatic world, and a historical world of the past. Throughout the course of the opera characters traverse from one temporal world to the next and occasionally occupy more than one simultaneously. As the opera progresses the time structures become more interwoven and complex, both dramatically and musically. To understand this narrative structure, I use the narrative theories of Paul Ricoeur as well as Marie-Laure Ryan's theorization of metalepsis. Metalepsis—the movement from a primary operatic production to an internal, secondary one—is understood by Ryan to highlight the artificiality of the inner play because the audience can see that the internal production exists as a fictional world within another fictional world. However, I argue that metalepsis has the opposite effect in Corigliano's opera—that characters' movement from present day Versailles to the reality of 18th century France

highlights the artificiality of the primary production. *Ghosts of Versailles* offers an alternative to these narrative conventions due to its unique subject matter as well as its conception and depictions of reality.

Tanvir, Kuhu *(English)*
Room 539, 1–2 p.m.
Indian Cinema on Cellphones: Immersion, Fragments and Failure

Scholarship on watching movies on cellphones is still at a nascent stage with newer devices offering radically different ways of accessing film content. Thus far, research is largely limited to Western countries, even though mobile industries of developing countries are expanding dramatically. This paper examines the exhibition and consumption of popular Hindi films in the mobile phone landscape in India. Discourse on watching media on cellphones has focused on the lack of immersion as a shortcoming of the cellphone as a screen which is not only very small, but also offers endless distractions. This criticism is rooted in the most traditional aspects of Apparatus Theory which desires and in fact imagines an ideal spectator who is unwaveringly immersed in the fiction of the film. I argue that not only was there never a perfectly undistracted spectator even in the darkened movie theater, but that immersion as a category is inadequate to understand the massive changes in visual culture that are enabled by the cellphone as a screening device. I demonstrate how cellphones pull cinema into an action oriented mode of viewership. The Indian media terrain is especially suited to illustrate the altered contours of film spectatorship, because unlike developed countries, both the film and the mobile phone industries in India have a thriving pirate underbelly that co-exists with and constantly undermines the "official" industry. In studying the intersections between cinema, mobility and piracy, I hope to illustrate how the cellphone has shaped a viewing culture that is marked by poor quality images, pirated media and regularly failing signals and coverage, leading to a fragmentation of the film object into songs, clips, dance sequences, GIFs etc.; this fragmentation isn't mourned but is celebrated for the possibilities of access that it opens up.

Taylor, John *(English/Film and Media Studies)*
Room 538, 11 a.m.–noon
The Interstate Logic: How Super Highways Changed the Representation of Time and Space

Studies of roads and highways in film have tended to focus on the road as a "figurative space," emphasizing its mythic or metaphorical dimensions, while devoting little time to the material and sociopolitical history of actual roads as actual spaces. This article examines the impact of the U.S. Interstate Highway System on cinematic representation, which I argue is essential to understanding changes to the representation of space and time in U.S. film since the system's inception in the 1950s. Drawing on my archival research of films produced by and for the U.S. government and corporate stakeholders during the 1950s and 60s, I show that these films demonstrate the great extent to which the network's planners used the language of cinema to construct a new visual experience of travel that restructured the public perception of space. The result was a new dominant logic for representing space, which championed new, suburban non-places, while reconfiguring old familiar places as dangerous or horrifying. I link this phenomenon to the emergence of rural slasher films through an analysis of *Psycho* (1960, Alfred Hitchcock). A brief analysis of this very familiar film, which directly implicates bypass highways in the creation of horrifying space, demonstrates the importance of greater attention to roads as real spaces, and the extent to which they circumscribe the creation of the imagined spaces of film and television.

Tembo, Maiwase *(Biological Sciences)*
Room 548, 1–3 p.m.
PIP2 and Ca2+ Are Both Required to Open TMEM16a Channels in Xenopus laevis Oocytes

The widely expressed Ca2+- activated Cl- channel, transmembrane member 16A (TMEM16a), has various physiological functions ranging from mucosal secretion to regulating smooth muscle contraction. Despite its importance, little is known about the mechanisms that regulate TMEM16a gating. Here we recorded Ca2+-evoked Cl- currents passed by the endogenous TMEM16a in oocytes from the African clawed frog, Xenopus laevis. Using the inside-out patch clamp technique, we observed that the TMEM16a-conducting currents rundown despite the continued presence of Ca2+. Current rundown is common amongst channels regulated by phosphatidylinositol 4,5-bisphosphate (PIP2). Thus, we tested the hypothesis that TMEM16a is potentiated by PIP2 using PIP2 sequestering and recovering agents. First, we recorded repeatable current rundown seconds after patch excision in the presence of Ca2+. After current had run down, we applied the soluble dioctanoyl-PIP2 analog (diC8-PIP2) in the presence of Ca2+ and we observed 40 % current recovery. Conversely, neither diC8-PIP2 with no Ca2+, nor diC8-PI without the two phosphate groups, were able to recover current. We next applied PIP2 sequestering agents, neomycin and anti-PIP2, and found that TMEM16a current ran down twice as fast than when exposed to just Ca2+. Altogether, our data demonstrate that TMEM16a requires both Ca2+ and PIP2 to pass current.

Titus, Nikhil Thomas *(English/Film and Media Studies)*
Room 538, 2–3 p.m.
Curated Desires: Examining Intersections of Low-Cost Film Exhibition, Migrant Audiences and Gentrification in Mumbai

My research interests focus on the relationship between cinema and the working class in Mumbai's low-cost film exhibition spaces such as video-parlors and single screen theatres. The study is based on alternate production, distribution, and viewing practices that an increasing number of people in Mumbai and other parts of the Global South have to adopt in order to counter the exclusionary processes of development and entertainment regimes. Innovative distributions platforms that audiences utilize to get access to content, download-centers where content can be purchased on cards and then played on mobile phones, and the piratical infrastructures these circulations are facilitated by are central to my work. The common reportage around such institutions revolve around the publics, low caste-class migrant men, that frequent them, or the aesthetics of the cinema exhibited there, often expressing strong biopolitical sentiments against such peoples. It is this quest of understanding the vulnerabilities and compulsions of those who patronize such spaces and the political economy around such venues that form a core to my research. Through analysis of video footage, audio interviews, and archive images, I argue that neoliberal policy, censorship, and intellectual property regimes shape this distinct arrangement of screens and audiences, and yet paradoxically produce spaces where these doctrines experience precipitous drops. Critical to the study is an examination of structures that facilitate access to rights and recreation, and how they entangle the lowermost citizens with processes of the state.

Togami, Chie *(Sociology)*
Room 539, 1–2 p.m.
Creating Commitment in an Ecovillage Community

Existing literature on the topic of individual commitment to social movements focuses primarily on how the internal dynamics of those movements foster commitment. In so doing, scholars have largely ignored the ways that intra- and extra- movement mechanisms work in tandem to reinforce commitment in social movements and social movement communities. This thesis draws on original data gathered through participant observation and interviews at a Japanese Ecovillage to speak to the central theoretical question: How is individual commitment to social movement communities, especially those that resemble total institutions, sustained? Building on the work of Kanter (1968, 1972) I argue that four types of mutually-reinforcing mechanisms sustain commitment in high-commitment social movement communities: 1) quotidian rituals and group practices, 2) individual investment and sacrifice, 3) charismatic leadership, and 4) embeddedness within transnational movement networks. I suggest that this fourth kind of commitment mechanism, embeddedness within transnational movement networks, is an understudied type of commitment mechanism that may actively reinforce individuals' affective, instrumental, and moral commitment to high-commitment social movement communities. I conclude by discussing the implications of this analysis for the study of activist commitment to contemporary transnational social movements.

Toth, Sharon *(Anthropology)*
Room 548, 1–3 p.m.
A Nutty Experiment: Statistical Analysis of Experimental Trials of Human Acorn

Human behavioral ecology (HBE) combines human decision making and mathematical modeling to investigate human actions in specific environments. A basic assumption of HBE modeling is that humans should optimize behavior related to survival and reproduction (for example, when gathering and processing food). Understanding what constitutes optimal behavior enables predictions about both contemporary and prehistoric decision making; when the empirical record conforms to or deviates from these predictions, we learn more about such things as the structure of human social life, stresses imposed by population size and/or environmental change, and the influence of hierarchy and/or inequality. In North America, particularly California, acorns were a common food source for Native people prior to European contact. Collection and processing of these small nuts requires a substantial amount of labor to make them suitable for human consumption. The costs of the total enterprise affect decisions about whether or not to consume acorns instead of pursuing other food sources. This research provides empirical estimates of the time required to harvest and process acorns, which can then be compared to similar studies of alternative foods. Data collection was obtained through an experimental paleoethnobotany class at the University of Pittsburgh where students participated in timed trials for all stages of acorn harvest and processing. Here I evaluate these data statistically. Further behavioral studies will examine why acorns were a main food source in some parts of the country but not others even though they were equally readily available.

Unal, Cigdem *(Political Science)*
Room 527, 10–11 a.m.
Travelling Dangerously: Exposure to Terrorism at Home and the Willingness to Travel to Countries Experiencing Terrorist Attacks

Why does terrorism hurt some economies more than others? We study this question by focusing on the tourism sector and propose that where tourists come from is an important factor. Previous

literature has shown that there is an overall negative effect of political violence on tourism, but few studies have explored why some countries see bigger drops in tourist numbers after an attack. We argue that people from different countries vary in their fear of being a victim of terrorism and this fear influences their travel choices. In particular, people who are exposed to terrorism in their home countries are less afraid of traveling to countries recently hit by terrorism, because these people are more accustomed to this type of risk. Based on this logic we predict that, after a terrorist attack in a destination country, the drop in tourists coming from a country experiencing terrorist attacks will be smaller than a peaceful country. We analyze a dataset of international travel between 170 countries from 1995 to 2014 and find support for our hypothesis. Specifically, the negative effect of terrorism on international travel is smaller if both the destination and origin countries have recently experienced attacks. The main insight of our paper is that people react to terrorist attacks differently and their exposure to terrorism at home is an important source of this variation.

Vamossy, Domokos *(Economics)*
Room 527, 2–3 p.m.
Investor Attention & Earnings Announcement Returns

Using Google search data and a large sample of firms, I examine the pricing effects of investor attention surrounding earnings announcements. I find a positive relationship between attention and abnormal returns. In particular, a portfolio that invests in the highest attention stocks while shorts the lowest attention stocks earns a cumulative abnormal return of 1.9$\%$ in a three-week window. Overall, this paper is the first to examine the entire universe of the matched CRSP I/B/E/S data from 2013 to 2016, and provides new evidence highlighting the important role of retail investor attention in the pricing of financial information.

Walsh, Catherine *(Psychology)*
Room 527, 1–2 p.m.
Development of Glucocorticoid Resistance Over One Year Among Mothers of Children Newly Diagnosed with Cancer

Chronic distress associates with upregulation of innate inflammation and prolonged release of cortisol, known to downregulate levels of inflammation. It is suggested that this paradox is related to distress-related down-regulation of glucocorticoid sensitivity. Caring for a child with cancer is a provocative stressor. Although most mothers cope well, 25-30% show prolonged distress. Here, we assessed distress, interleukin (IL)-6, and glucocorticoid resistance among 120 mothers at 1, 6, and 12 months after their childâ€™s diagnosis. A latent factor for distress was indicated by depression, anxiety, and post-traumatic stress. Latent difference score models revealed a significant positive association between change in distress and change in GCR from 0-6mo. (B=.490) and 6mo.-1yr. (B=.739). The association across the second 6mo. was retained in analyses that adjusted for peripheral leukocyte counts. IL-6 increased significantly from 0-6mo. (Î±=12.94), but this change was not associated with distress or GCR. These findings provide initial longitudinal evidence for an increase in GCR over the first 12 months following onset of a chronic stressor that parallels changes in distress. However, changes in GCR were unrelated to IL-6 over the same period. Future studies should consider additional pathways through which chronic stress relates to increases in IL-6. Given the health consequences of reduced sensitivity to the immunosuppressive effects of glucocorticoids, it is important to investigate the timing and mechanisms through which chronic stress relates to GCR.

Wang, Tianyi *(Economics)*
Room 527, 1–2 p.m.
Impact of the Telegraph on News Content in the Mid-19th-Century United States

Using a novel dataset on the growth of the telegraph network and a unique text-based panel dataset on 30 U.S. weekly newspapers in the 1840s, I examine the impact of the telegraph on newspaper content, including the geographic coverage, genre, and specific topics of news. I find that having access to the telegraph increased newspapers' reporting on both national news and European news, with local news appearing to be crowed out as a result. Telegraph access also increased reporting on political news but not on commercial news. In addition, telegraph access led to more coverage on slavery and territorial issues. I argue that the shift in focus away from local to more national news reporting contributes to the high influence of newspapers over the public domain. Providing an unprecedented interconnectedness among different parts of the country, the telegraph may have in part facilitated a national conversation on important topics and fostered a shared sense of nationhood.

Wang, Zheng *(Statistics)*
Room 538, 10–11 a.m.
Quantifying Improvement of New Biomarkers under Competing-Risk Censoring

Two novel measures, the net reclassification improvement (NRI) and the integrated discrimination improvement (IDI), have been proposed to characterize accuracy improvement in prediction when new biomarkers are added to regression models. Studies of these two indices have progressed from original dichotomous outcomes to multi-categorical and survival outcomes. In this work we extend the NRI and the IDI to competing-risk outcomes, and consider using cumulative incidence functions to quantify cumulative risks of each event. We adapt these two accuracy

improvement measures for multi-categorical outcomes to the competing-risk setting, and handle the “missing” category due to censoring by using inverse probability weighting. Various competing risks models are considered, such as the Fine and Gray, multistate, and multinomial logistic models. Procedures of estimation for the NRI and the IDI from competing risks data are presented, and bias-corrected and accelerated bootstrap is applied for inferences. Simulations demonstrate that proposed estimators perform very well. The Multicenter AIDS Cohort Study is used to illustrate the extended NRI and IDI.

Ward, Zina *(History and Philosophy of Science)*
Room 539, 1–2 p.m.
Epistemic Values and the Intergovernmental Panel on Climate Change

Climate science has gained increasing attention from philosophers working on science and values in recent years, partly because of its political importance, and partly because climate science is interestingly different from the disciplines that such philosophers have traditionally focused on. One recent paper that uses an example from climate science to revisit familiar questions about science and values is Stephen John’s (2015). The example of the IPCC does not vindicate the value free ideal: a reply to Gregor Betz. In this insightful paper, John offers a Rudnerian reply to Betz’s claim that IPCC reports are immune from the influence of values. He then proposes a positive characterization of epistemic values and suggests that the IPCC might be value-free in the sense that it relies on epistemic values only. In this paper, I critically evaluate John’s suggestion. Drawing on an essay by William James (1897), I argue that epistemic values (as John understands them) can conflict, and that this necessitates the involvement of non-epistemic values in science. Concretely, this means that the IPCC’s choice about what kinds of evidence to include in its reports depends in part on political and social values. Although it is tempting to see this conclusion as undermining of the IPCC’s authority, I claim that appreciating its value-ladenness actually gives us reason to trust the IPCC’s findings.

Wu, Xinyi *(Physics and Astronomy)*
Room 548, 1–3 p.m.
Breaking Electron Pairs in Pseudogap State in SmTiO3/SrTiO3/SmTiO3 Quantum Wells

Pseudogap behavior has recently been found in strongly confined SmTiO$_3$/SrTiO$_3$/SmTiO$_3$ quantum wells (Marshall et al, PRL 117, 046402 (2016)). We employ low-temperature transport measurements on SmTiO$_3$/SrTiO$_3$/SmTiO$_3$ Hall bar structures to determine if this phase can be associated with the formation of a paired electron liquid phase. We drive a portion of the device out of equilibrium with voltages that exceed the pseudogap energy and measure the resulting longitudinal and Hall conductance. A unidirectional change in conductance is observed when the pair-breaking drive amplitude exceeds a critical value, providing evidence for the existence of long-lived quasiparticle excitations.

Wysocki, Tomasz *(History and Philosophy of Science)*
Room 538, 2–3 p.m.
Norms and the Choice of College Major

Here’s a typical explanation of the choice of college major: the utility of choosing a major comes, first, from the present value of her future earnings, had she chosen this major, and, second, from how interesting she finds this major. Choosing a major, she maximizes the sum of these two kinds of utility. But consider a student in the last row of your lecture theatre. Always on his phone, he seems in pain having to attend any classes. Moreover, he’s majoring in a field whose graduates struggle to get a well-paid job. The typical explanation seems to fail here. To account for this behavior, I invoke the framework of identity economics and propose to extend students’ utility function to include a third element: utility gained from observing the norm or the s-norm for short. Therefore, students enroll college partially because they think one ought to have a college degree, regardless of any additional perks that come with it. First, I construct a model of college major choice including the motivation from the s-norm. Second, I present the data from a representative sample of 1081 Polish undergraduates and I justify the questionnaire I used to collected the data. Third, I present the results obtained with robust regression and the multinomial logit model. They confirm my hypothesis: students are partially motivated by the s-norm. The stronger this motivation, the more likely a student will choose an easy major over a demanding one.

Yang, Melissa *(English)*
Room 527, 11 a.m.–noon
By Shattering the Vulture’s Nose: Sensational Avian Rhetorics

Jonathan Gray opens his entry on "Vultures: Consumptions and Conjurings" in Rhetoric Society Quarterly (2017) by alluding to the "noxious…pong of rot or stench of brimstone" associated with the scavengers. When articulating his multisensory engagements, Gray first cites his "environmentalist's nose." Olfaction-centric rhetoric around vultures may be readily accepted today, but was once suppressed for over a century due to an ornithological debate between 19th c. naturalists John James Audubon and Charles Waterton, which I will recapitulate and examine in this talk. Both naturalists involved were also artists – arguably more than they were scientists – and prone to artifice. My project examines the rhetorical dynamics of this niche but sensational debate on avian olfaction, and its lasting influence on scientific

progress in ornithology, as well as constructions of disciplinary expertise.

Zhang, Wangcaixuan *(Rosa) (Music)*
Room 527, 11 a.m.–noon
Rock Musicians Under Censorship: A Comparative Study on Narratives of Rock n' Roll Musicians in Iran and China

It all started underground. A scene of rock music, distanced from the mainstream, emerged in both Iran and China during the end of 20th century when young grassroots started to voice themselves with their music. Although being strictly censored in both countries, rock musicians did not stop pursuing their music. "We were constantly testing to see how far we could go…We felt that if we couldn't upset them, we weren't doing it right," Cui Jian, the first Chinese rock musician replied when being asked about the censorship on his music in China. The risk of being silenced in the mainstream and marginalized in the society, instead of crushing the rock music scene, nurtured the rock musicians to become the "flower growing in the middle of the dessert." However, the narratives depart today. While Iranian rock musicians are still fighting for their survival, the Chinese counterparts are thriving under censorship. What has led to such oppositional situation? By investigating the history of censorship regarding music production and comparing different narratives of rock musicians in Iran and China, I examine the motivations and strategies in making rock music under the state censorship, and more importantly, understand how such strategies have shaped the meaning of rock and roll in those two countries. I argue, the compromises that are made in musical aesthetics to conform or not conform with a larger audience not only alter the fate of the musicians, but also create different the meanings of "rock" in Iran and China.

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