**Embodied Object - A Physical Interrogation of the Male Gaze**  
Olivia M Anderson, Junior, Dance  
Mentor: Jennifer Salk, Dance

This solo dance work explores ways in which the male gaze inhibits women’s lived sexual expression and identity. As a choreographer and dancer, I will be utilizing creative and embodied research to physically interrogate the portrayal of female bodies as visual and sexual objects. I draw stylistically on the work of modern choreographer Pina Bausch, specifically exploring the way her work displays societally-recognizable misogynistic gender roles and objectified female bodies on stage, then contrasting that with powerful and deeply emotional movement expression from the female dancer, showing that she is much more than the images society places on her, and these images stifle her identity, her freedom, and her truth. I also draw on the work of writer and art critic John Berger, primarily in his examination of the culture of voyeurism and exploitation of female bodies in classical nude paintings. I incorporate bodily shapes from these "nudes" and also from contemporary advertisements, in both of which women’s bodies are often sculpted and twisted out of realistic proportion in order to better suit the male viewer’s fantasy, ultimately born of a male fear of rejection from the sexually empowered and autonomous woman. My embodiment of these images exposes the effort and exhaustion behind them. The visceral emotionality in this work comes from my desire to physically challenge these ideas within my own body, as I explore the ways in which I’ve internalized and performed these harmful notions of desirability and femininity in my daily life.

**Words and Weapons: The RAMM:\Sigma\Sigma\Sigma\Sigma's Formula for Reclaiming the Power of Language**  
Ruby Khin (Ruby) Barone, Junior, Art History, Comparative History of Ideas  
Mary Gates Scholar  
Mentor: Jos?? Antonio Lucero, International Studies/CHID  
Mentor: Maria Elena Garcia, Comparative History of Ideas  
Mentor: Adam Warren, History  
Mentor: Lydia Heberling, English, University of Washington, Seattle

This project explores the history and power of language in relation to graffiti writer Rammellzee’s philosophy of Ikonoklast Panzerism as well as to his art. Using informal interviews, ethnographic engagement, and close readings relating to Rammellzee and the alphabet’s history, I investigate how the individual can claim the power of language back from colonizers and oppressors through subversive art. I question how Rammellzee’s work can be used to reimagine the alphabet as a tool to deconstruct monuments of oppression and imperialism that are pervasive to society. Rammellzee founded Ikonoklast Panzerism on the idea that each individual letter of the alphabet can be armored and weaponized in order to free themselves from the institutions which wield the power of language over the rest of society. He bases his beliefs in the medieval history of monastic illuminated calligraphy and uses his theories to create art which subverts structures of power. I argue that Rammellzee’s work reveals the potential of individualized power by reclaiming the almighty power of language and challenging the limitations of legibility and standardization. Drawing from concepts such as ethnographic refusal, and from the writing of scholars like Michel-Rolph Trouillot to inform my creative work, this project emphasizes the power of the written word in today’s world and investigates how language can be reimagined and repurposed by each individual. I synthesize my research findings into a creative form that touches on my own relationship to language in academia, and how I can apply Rammellzee’s ideas to my own life.
A Cooler Way to Cool: Standing Wave Thermoacoustic Refrigerator

Patrick He, Senior, Electrical Engineering
Michael Skripals, Senior, Physics: Comprehensive Physics
Mentor: Amal al-Wahish, Department of Physics, University of Washington

What does it mean to grasp an object and feel it to be “cold?” You aren’t gaining cold; you are losing heat as it transfers out of you and into the object. Likewise, air conditioners transfer heat out of rooms and refrigerators transfer heat out of food. Most refrigerators and air conditioners are vapor compressors, meaning they transfer heat by compressing a toxic substance called refrigerant, which rapidly condenses and evaporates. This project demonstrates a simpler and cheaper method of heat transfer using thermoacoustics. Thermoacoustic refrigerators (TAR) have been researched for decades but only used in niche applications like onboard the Space Shuttle. We hope that our findings can drive commercial development. Our TAR has 4 main components: transducer, resonator, stack, and heat exchangers. The transducer is a loudspeaker that generates a standing wave inside a PVC pipe resonator. The stack is a plastic 3D-printed cylinder with internal parallel plates. A phenomenon called the “Brayton cycle” uses the sound waves to pump heat and generate a temperature gradient across the stack, making one end cold and the other hot. The cold heat exchanger brings in air that needs to be cooled and transfers heat from it into the stack, while the hot heat exchanger cools down the hot end of the stack. The actual sound waves at the stack are disrupted by the resonator tube, heat exchangers, and the stack itself. This decreases the slope of the temperature gradient. Some research has been done on the effects of different speaker input waveforms (sine, square, triangle, etc.) but not on cancelling out the disruption. Therefore, we will use signal processing to find the proper speaker input waveform that corrects this disruption. Our MATLAB simulations and theory lead us to expect that this should generate a steeper gradient and thus better cooling.

Race and Immigration: White Supremacy, Incarceration, and Borders

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Melissa Guadarrama, Senior, International Studies: Latin America, Law, Societies, & Justice
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Mentor: Jos?? Antonio Lucero, International Studies/CHID

The United States immigration system was created upon the ideas of white supremacy. There have been many instances of xenophobia and racism throughout history used as a ploy to justify anti-immigration policies. The US-Mexico border, Latin America, and the Caribbean play a significant role in the conversations around immigration due to the intersection of various racial identities; white supremacy plays a part in justifying discrimination and violence towards people of color. This research asks how racial differences influence US immigration incarceration and deportation. This is conducted by comparing the historical and contemporary contexts of border patrol and immigration policy to analyze the modern-day landscape of immigration and how it has or has not transformed over time. This was achieved through a literature review of historical sources around immigration policy and secondary research on the history of the US immigration system. Desired and achieved recruitment consisted of two academic professors who had extensive research and knowledge on the historical and contemporary framework of the US immigration system as well as two US community organizations focused on advocating for Black and Indigenous immigrant rights. They were identified through their research and activism, centered around the intersections of race and immigration. Drawing upon interviews and secondary research sources, our research group presents an in-depth series of podcast episodes, which feature candid discussions with professors and organizations heavily involved with the immigrant community. These interviews allow the listener to gain a deep understanding of how racial differences impact and shape immigrant incarceration and deportation. Overall, our research group hopes to demonstrate how immigration policy has disproportionate impacts depending on a person’s race, leading to varying experiences and statistical differences in incarceration and detention rates. Through this podcast, our research group hopes to inspire conversation around the intersection between race and today’s immigration policy.