Research Project Title: Improving accessibility, audience, and appreciation with Andean and Amazonian artifact collection

Student Presenter: Diego Arellano

Faculty Mentor: Michelle Wibbelsman

Faculty Mentor Department: Department of Spanish and Portuguese

Research Abstract: OSU’s Andean and Amazonian Cultural Artifact Collection was acquired by the Center for Latin American Studies (CLAS) in Autumn of 2015 through a series of donations and purchases supported by Title VI Federal Funds. The collection supports curriculum and programming on the Andes and Amazonia connected to the Quechua Language Program and the Andean and Amazonian Studies Minor at OSU. The collection revolves around the ways indigenous communities maintain storytelling, cultural production and oral traditions. As student curator, I focused my research interests on three major points: 1). How to understand the interests and attention of the general audience, 2). how to identify and effectively use interactive technology that engages a new generation of students while 3). also providing depth and insight into the collection developing an overall sense of audience appreciation.

Specifically, I look at how everyday digital technology that is accessible and familiar to students, such as smartphones, can be an entry point into cultural appreciation. In collaboration with various departments on campus, I developed SoundCloud recordings, 3D digital models, and a digital storytelling map that allow students to access information that communicates key concepts and/or aesthetics of Andean and Amazonian culture. Ease of accessibility is ensured by way of QR codes that students can scan with their smartphones using popular apps like Snapchat. The familiar technology and frequent access have the potential to bring Andean and Amazonian culture into the realm of the familiar as well. Beyond audience engagement, these digital mediums are conducive to learning in a different way. Preliminary results indicate that use of this interactive tech resulted in longer and more focused attention to items in the collection. These observations provide a foothold for conceiving of and creating dynamic new learning environments for audiences of all ages and levels of expertise.
Research Project Title: Women's adaptation to climate change in Melghat, India

Student Presenter: Rachel Beery

Faculty Mentor: Elisabeth Root

Faculty Mentor Department: Geography

Research Abstract: Introduction/Background

The effects of climate change are felt everywhere today in our globalized society. Overall in the study of demographic trends we understand that women who are more educated with better access to health care, and contraceptives on average have less children over their lifetime. However, little research has been done to understand how women are affected by climate change. This project investigates attitudes to climate change, how women in the area of Melghat, India have adapted to effects climate change, and how those decisions affect their choices in family planning.

Methods

Fifty in-depth interviews were conducted using stratified random sampling in 31 villages within the area of Melghat, India. The interview included questions on demographics, agriculture, family planning, and health translated in the local language.

Results

A concern for the effects of the weather changing was reported by 76% of the women saying they believe the weather will become worse over time with increasing temperature, decrease in precipitation, and unpredictability of weather patterns. Monsoon season rain are of most concern in subsistence agriculture societies in India as this dictates crop season. A true disconnect exists between those who rely on the natural environment as 32% of the women said they didn’t know what climate change is or what effects it has. There are clear concerns about the changing climate with 48% of women stating that climate change has influenced their decisions in limiting family size. Education level and age is found to have the strongest correlation to women knowing of climate change and in turn limit or will limit the amount of children they will have.

Conclusions

Women in these areas of rural India and other subsistence agriculture communities will have a difficult time adapting to climate change. These findings are the start of understanding how this area can adapt to climate change as the next generation of women make the best decisions for their families. With education the younger generation of women are receiving they know and understand these effects and making decisions to have less children so they can provide for all in their family.
Research Abstract: Climate change is a highly politicized, polarizing topic. Despite the scientific consensus that climate change is occurring and is human caused, 21% of Americans do not believe climate change is occurring (Pew Research Center, 2016). To combat this, researchers have been investigating effective ways to increase belief in climate change by presenting scientific consensus information, for example (van der Linden et al. 2015). However, other research has suggested that this approach could backfire, especially for Republicans (e.g., Bolsen & Druckman, 2016; Hamilton, 2015; Kahan, 2013). Little research has explored how source affects the acceptance of simple statements about climate change. The purpose of this study is to explore effective methods for increasing belief in climate change through source matching. It has been shown that opinionated leaders may be an effective means of communicating science and overcoming political bias (Nesbit and Kotcher, 2009).

I will manipulate source information in a pretest/posttest design in order to understand how political affiliation and knowledge influences climate change persuasion. In the pre-test, participants will provide their political affiliation, climate change belief, and scientific/political knowledge. Source information will include a brief biography of the source (e.g., military leaders, scientists, religious leaders, celebrities) and a quote on climate change. In the posttest participants will answering questions regarding their belief in climate change, and willingness to take action (sign a petition, donate).

I expect that Republicans will be more persuaded by sources like military and religious leaders. More importantly, I expect an interaction of knowledge and source: high knowledge Republicans should increase in climate change beliefs when presented with military/religious sources and decrease in climate change beliefs when presented with scientists/celebrities. Low knowledge Democrats and Republicans and high knowledge Democrats will be equally persuaded by both because the information will not challenge their political ideology.

This study may reveal an important way to increase climate change belief, and possibly action, in those who are difficult to persuade. In this case, those people are high knowledge Republicans, but this approach could be adapted for other domains.
Research Project Title: Meningococcal disease and it’s importance at university institutions

Student Presenter: Mikafui Dzotsi

Faculty Mentor: Randall Harris

Faculty Mentor Department: Division of Epidemiology, College of Public Health

Research Abstract: Meningococcal disease, or a disease which can result in the inflammation of the meninges or septicemia, is known to be spread through droplets. While many individuals are carriers, individuals not vaccinated become more susceptible to the disease, given the right environment. Even though meningococcal disease is rather rare and on the decline, college students who often live in dormitories or close quarters, remain one of the most susceptible populations. The purpose of this study was to compare US university meningitis prevention and awareness efforts for their students, so state health departments and universities can better decrease the annual number of students that become victims of the disease.

For this study, US university meningitis cases reported by the National Meningitis Association between 2013-2017, were utilized as case studies. In addition to gathering specific case data and state immunization requirement data, university health center directors or staff and various national meningitis and immunization organizations were also interviewed. The main areas compared and analyzed in this study were university and state immunization requirements, trends in the types of strains that occurred, and the existence of university meningitis active or passive prevention efforts and awareness campaigns.

Through analyses of state health department protocols, it was found that not all state departments require Men ACWY vaccination for adolescents entering college. Even though serotype Men B is more virulent, no universities require Men B vaccination, given its fairly recent FDA licensure. While all US universities are required to follow state health regulations and ACIP guidelines, some universities have gone above and beyond in awareness and vaccination education.
Research Project Title: Where there's smoke, there's fire: examining associated press coverage of wildfires in the US

Student Presenter: Brianna Gwirtz

Faculty Mentor: Annie Specht

Faculty Mentor Department: CFAES ACEL

Research Abstract: This research project examined newspaper articles surrounding wildfires that were published by the Associated Press. Following the Starbuck Fires in the western United States, which devastated many farms and ranches in 2017, I wanted to investigate if and how print media focused on agricultural and environmental issues related to wildfire tragedies. Using the framing theory, this study examined how news surrounding wildfires is framed and whether or not agricultural and environmental topics are discussed. Using Lexis Nexis, I searched for articles published by the Associated Press between November 1, 2012, and November 1, 2017. I then examined a sample set of 5 percent of the 2,990 articles (n=150), some of which contained several newswire stories. In articles that classified as newswires, I assigned a frame and actor to each timestamp. In total, I assigned a primary frame to 243 stories within the 150 articles and then assigned actors to each story. I created 35 different options of frames based on the work by Terracina-Hartman (2017). Nearly a quarter (22%) of the stories were unrelated to wildfires upon reading, and 10 percent of the stories were not related to American wildfires. The most common frame was a fire update, which included a status report on the fire and fire damage (27.6%). Only one story had a primary frame related to agriculture (0.04%). Two stories discussed threats to wildlife (0.08%). Further analysis may uncover secondary frames that address agricultural, environmental or natural resources issues.

This research is important because it shows that agricultural and environmental factors are often not covered by mainstream press during periods of tragedy, such as a wildfire, despite large losses of farmland, forests, and other natural resources (USDA, 2017).
Research Project Title: Double whammy?: how (dis)confirming a negative STEM stereotype affects women in subsequent STEM domains

Student Presenter: Morgan Morrison

Faculty Mentor: Steven Spencer

Faculty Mentor Department: Psychology

Research Abstract:

Introduction: Women are often stereotyped as less proficient in math and science than men (Spencer, Steele, & Quinn, 1999). Women are also gravely underrepresented within the STEM field, making up only 29% of the workforce (NSF, 2016). Stereotype threat theorizes that negative stereotypes surrounding one’s identity create extra pressure that causes individuals to underperform (Steele, Logel, Davies, 2016). Stereotype spillover occurs when confirming a negative stereotype depletes mental resources, leaving individuals at subsequent risk of self-control failure (Inzlicht & Kang, 2010). However, it remains unclear whether stereotype spillover transfers to other negatively-stereotyped domains. We examined whether confirming a negative stereotype in one STEM domain (e.g., math) affects women’s performance in a subsequent STEM domain (e.g., computer science).

Methods: Participants were female college students (N = 90) majoring in STEM fields who viewed STEM abilities as central to their identity. In a study ostensibly examining how math abilities transfer to other domains, participants took a difficult math exam where they received false feedback (either positive, negative or no feedback). After self-reporting emotions and self-esteem, participants completed a coding task for however long they felt they were making meaningful progress. The primary variable of interest was how long they persisted in the coding task.

Hypotheses: According to the spillover hypothesis, we believe that when women receive negative feedback on the math exam, they’ll believe they’ve confirmed a negative stereotype about their group. As a result, this spillover effect will cause them to spend less time on the coding task, experience lower self-esteem and more negative emotions.

Analytical Strategy: When data collection completes in late February, the data will be analyzed using a combination of between-subject ANOVAs, hierarchical linear regression, and moderation analyses using SPSS.

Implications: Understanding the consequences of this spillover effect can shed light on the viewpoint of women in STEM. If one’s abilities to perform tasks are negatively affected by previous failures in STEM domains, this could give insight on how women could be deterred from STEM. Ultimately, this knowledge can be applied to improve conditions and encourage more women to be in the STEM field.
Research Project Title: Aid for an ageing nation: a geographic perspective on migration policies in Berlin, Germany

Student Presenter: Rebecca Martin

Faculty Mentor: Carmen Taleghani-Nikazm

Faculty Mentor Department: Germanic Languages and Literatures

Research Abstract: Since 2015, Europe has struggled to deal with the influx of refugees and migrants from Syria, Iraq, and other Middle Eastern and North African nations. These migrants are an advantage for Europe’s many ageing nation-states, though this fact has not been the focus of public discourse. Working age residents are needed to contribute to the economy and support residents entering retirement age and ideally the number of working age people should be equal to retirement age people in a nation. Germany has one of the world’s oldest or “grayest” nations and they need more working age residents. Germany experienced an influx of more than 2.1 million immigrants in 2015 due to the "open-door" asylum policy declared by Germany's Chancellor, Angela Merkel. This policy accepted all migrants seeking asylum and attracted economic migrants, not seeking political asylum. The “open door” policy received mixed reactions by German citizens, ranging from welcome marches to xenophobic fearmongering. To attempt to better understand the opinions of German people about refugees and migrants, this research study implemented a survey in Berlin, Germany. This survey was active from May-July 13, 2016 and it obtained Berlin residents' opinions as well as background information of the participants (104 total responses). It was hypothesized that Berlin residents who perceive their future economic outlook as “worse” would be less likely to support asylum policy. The data collected via survey responses supported this hypothesis, and it was found that there was a significant difference between the frequency of observations (X²=23.1, p-value< 0.0001207). This insight is useful to governmental actors in any nation that deals with backlash about accepting immigrants, refugees, or migrants. Public policy is never in perfect step with popular opinion but understanding the crux of the issue is a start for crafting better policies. These survey results could assist governmental bodies or non-profit advocates in creating educational opportunities to combat fear and discrimination.
Research Project Title: Assessing the impact of a game-centered, interactive approach for using programming exercises in introductory physics

Student Presenter: Demetrius Tuggle

Faculty Mentor: Chris Orban

Faculty Mentor Department: Physics

Research Abstract: Computer programming is an increasingly desired skill for all STEM fields, not just computer science. We created simple and interactive computer programming activities based on the physics of video games and integrated these into introductory physics classes. Importantly, these activities typically involve less than 75 lines of code. Students completed an online assessment before and after each activity to measure the students' comprehension of physics concepts and to gauge student perceptions about the activity, such as difficulty, level of enjoyment and whether it changes their attitudes about STEM. The target population ranges from high school students to first year college students. Data have been collected from introductory physics courses at two different universities.
Research Project Title: How does the presence live animals effect the millennial generations reaction to conservation education?

Student Presenter: Lauren Sommers

Faculty Mentor: Kelly George

Faculty Mentor Department: Animal Science

Research Abstract: Zoos and aquariums have unique opportunities to educate the public utilizing human-animal interactions. Many zoos claim success in educating their audiences and inspiring pro-conservation outcomes, but little research exists to confirm this. Existing research focuses on family members and assesses knowledge gained and attitudes of participants depending on variables such as animal observability, animal behaviors, or presences of zoo educators. This study begins to fill these literature gaps, focusing on the millennial generation and measuring participants’ support of conservation and zoos financially and via social media in addition to attitudes and knowledge.

Participants were recruited randomly through posted flyers advertising the study. Given that the flyer included the name of the Columbus Zoo & Aquarium, participants more than likely had interest in the study due to previous animal or zoo interest. This potential bias should be avoided in future studies.

Presence of live animals is this study’s independent variable. Participants completed a pre-test survey, attended one of two live presentations (randomly assigned) about conservation by the Columbus Zoo and Aquarium, and completed a post-test survey. Controlled in both presentations were space, presenter, topics, and species. One presentation (treatment n=21) included live animals, while the other (control n=13) did not. Results show that treatment group participants answered with significantly more positive attitudes to the following statements about zoo animal care: animal welfare is a focus of the zoo (p=0.016), zoo animals are able to adapt to human-created environments (p=0.002) and zoos create spaces for their animals that allow expression of natural behaviors (p=0.015). Treatment participants also had significantly more positive attitudes toward penguins (p=0.046) and cheetahs (p=0.046). These results matched our hypothesis that human-live animal interactions increase positive attitudes towards the species. Also, the results suggest the presence of live animals increases the positive impacts of zoo messaging.
Research Project Title: The development of evolved, an exhibition on human evolution

Student Presenter: Abigail Sarver-Verhey

Faculty Mentor: Mark Hubbe

Faculty Mentor Department: Anthropology

Research Abstract: Museums are among the main centers of informal science learning, offering a uniquely hands-on approach to education. One area of science that is often seen as difficult to present and thus is not well taught in museums is evolution, particularly in the context of humans. However, evolution, as the foundational principle of biology, is an important area of science with implications for modern life, and thus deserves to be explored through museographic exhibitions. In order to address this need and explore ways to teach evolution in museums, I have developed Evolved, an exhibition that provides an introduction to human evolution through the lens of the modern human body. In the exhibition, visitors will explore the ways evolution has shaped their own body over the past several million years through interactive components that examine the evolutionary history behind their bodily traits. Through these experiences, they not only will see how evolution has shaped the human lineage over time, but also come away with an understanding of it as a science and a force relevant to their own lives. The design of the exhibition was informed by research on past evolution exhibitions, which found that exhibitions that contextualized evolution in a framework relevant to visitors’ own lives were most successful at promoting learning of evolutionary principles and engagement in evolutionary reasoning. Throughout the design process I have explored methods of science communication, hands-on learning, and exhibit design and utilized them to create an engaging and informative experience. The development of this exhibition has spanned all stages of the development process, from constructing a narrative that accurately represents evolution and contextualizes it in a compelling manner, to developing and testing interactive modules that allow visitors to learn evolutionary concepts through hands-on activities. Ultimately, this project has resulted in the development of an exhibition concept, interactives, label text, and a digitally rendered design of the exhibition space.
Research Project Title: Spiritus Ex Machina; The rights of autonomous artificial intelligence by 2050

Student Presenter: Benjamin Harvey

Faculty Mentor: David Staley

Faculty Mentor Department: History

Research Abstract: My research is a serious inquiry into the future, asking the question â€œWhat rights will be granted to artificial intelligence?. In order to examine this topic, I have created a scenarioâ€”a plausible narrative of the future-- by using contemporary events as foundational research on the potential rights of autonomous artificial intelligence. These sources include the New York Times, Quartz, Boston Dynamics, and other reputable sites.

My scenario details the possible way an autonomous AI may come to being, and how it might begin to explore the world around it with emotion being connected with computational hyper-efficiency. In the scenario, the AI, named ADAM, interacts with humans on a highly intelligent, humanistic level, and witnesses the legal and social fight for his recognition as a person develop around him. My scenario examines this fight from the perspectives of ADAM, the human forces that are for and against this recognition, and other, lesser AI who band together to support ADAMâ€™s humanity.

This research into the future will serve as a potential precedent, a road-map, for contemplating and handling the advancement of autonomous AI into human counterparts in the not so distant future.
Research Project Title: Solidified phenomena

Student Presenter: Theodore Morrow

Faculty Mentor: Sandhya Kochar

Faculty Mentor Department: Architecture

Research Abstract: Throughout the process of design, architects must find ways to represent their work. Representation is essential in explaining to others how the project works but is additionally how the architect themself comes to understand and conceptualize their own project. Generally this takes the form of floor plans, cross sections, and various drawings. Such representations, while very good at explaining the configuration of rooms or circulation paths, are unfortunately lacking in their ability to communicate ephemeral phenomenon such as light and ambiance.

Based off of a public competition prompt to produce warning markers for a nuclear waste storage facility and in conjunction with a research seminar on architectural representation, this project pushes the architectural drawing to represent more than just space. Moving back and forth between printed drawings and projected digital films, the research process for “Solidified Phenomena” questions the ability of drawing to represent atmospheres and the place of the drawing in the digital age. In its final stage, “Solidified Phenomena” culminates in the form of an eight foot long printed drawing overlaid with film projection, creating an array of effects which push traditional architectural representation and take a critical position on the drawing’s inability to convey ambiance alone.
Research Project Title: Navigating the self in near future science fiction films.

Student Presenter: Elizabeth Riggs

Faculty Mentor: Ryan Friedman

Faculty Mentor Department: English & Film Studies

Research Abstract: Introduction/Background: For many decades, the genre of science fiction has looked outward and forward through its subjects. Science fiction film, as it tells stories about an "another reality", addresses the concerns of a group as they perceive the direction of their real-world society. While science fiction films have focused largely on the effects on society as a whole, there has been a shift towards the end of the 20th century and into the 21st century to focus more on individuals. Instead of asking where our society is headed, they ask how can a person define themselves despite or through the science of their reality. These films begin in the intimate world of their characters, and slowly reveal aspects of the world around them, leaving the audience to question where, when, and how this "future" takes place, and how the individual fits in it.

Methods: This thesis project builds upon the definition of science fiction, focusing on how emerging science can be understood through the lens of the individual, instead of a society. It analyzes the narrative characteristics of these recent films, and how changing the way a science fiction film presents the future can affect a viewer's interpretation of its social commentary. In addition, it explores how they attempt to answer questions such as, "what does it mean to be an individual in this futuristic society", "how do we define human", "what barriers or complications are presented in self-definition", and "in what ways has interpersonal interaction changed or become mediated in this 'near-future'". The films under study are The Truman Show (1998), Never Let Me Go (2004), Black Mirror (2011-2016), Under the Skin (2013), Her (2013), and Ex Machina (2015).

Conclusion: The expected outcome of this research is first, to demonstrate the complicated relationship between the viewer and the filmic world when it is set in the "near-future", as well as address and investigate the humanistic focused narratives of these more recent science fiction films. Ultimately, analysis of these films could potentially identify a shift, or at least a new subgroup, in contemporary science fiction.
Research Project Title: The National Park Service in its centennial year: a study in five parts

Student Presenter: Christian Moore

Faculty Mentor: Cheramie No

Faculty Mentor Department: Kristi

Research Abstract: INTRODUCTION:

In its hundredth year, the national park system is a treasured component of the cultural landscape of the United States, but its continued thriving is threatened by a number of forces. The challenges of climate change, soaring visitor numbers, and the encroachment of urban processes and byproducts will require interdisciplinary thinking and action if the NPS is to continue to thrive in its second century. This project tests such an interdisciplinary approach: the five researchers - representing the sciences, engineering, and design - worked together to define the National Park experience in five related themes: arrival, habitation, sequence, atmosphere, and logistics.

METHODS:

In targeting experience, the researchers evaluated the impact the challenges above have on the visitor, the most potent voice for initiating change. "Arrival" explores trends in traffic at visitor centers: vehicles, ridership, group size and approximate age, and distance traveled; "habitation" investigates the balance between amenities and notions of wilderness in campgrounds; "sequence" offers a method for understanding rhythm and spatial sequencing in trails and their impacts on local environments; "atmosphere" reveals awareness and visible effects of ozone pollution; and "logistics" documents the process of conducting interdisciplinary research. The researchers visited thirty national park sites, including two for comparison in Alberta and British Columbia, Canada, over the course of two months in summer 2016. This project sought to employ a variety of data-collection methods, including interviews, photography, hand-drafting, and tabulation to address the five themes.

RESULTS/CONCLUSIONS

The breadth of study sites allowed for cross-park comparison and the identification of common features that define the national park experience in the present day and the existence of common challenges. The resulting data was analyzed, converted to graphic form, and woven together in a research book; brought together in this way, the five themes offer a multifaceted view of our national parks as they approach a new century and give light to both the good and bad of the NPS experience. The research book will be printed in Spring 2018 and distributed to planners and designers both within and outside of the National Park Service as a reference.
Research Project Title: Selective exposure paradigm platform - SEPP - a web application to study communication in high-choice environments

Student Presenter: Dana Brooks

Faculty Mentor: Knobloch-Westerwick Yes

Faculty Mentor Department: Silvia

Research Abstract: Introduction: Serious concerns exist as to whether people selectively attend messages that only reinforce preexisting views, resulting in increasing political polarization and tension. In online contexts, recent developments (social recommendations, social media, user-generated content) present entirely new questions when studying how individuals select and attend to public affairs information. Capturing which messages individuals attend to (selective exposure) and what drives selective exposure is of utmost importance when studying communication processes in the current high-choice media environment.

Method: We developed a Javascript, mySQL and PHP-based web application that allows a researcher to determine how various message cues--e.g., political stance, source, and popularity (â€œLIKESâ€)--jointly affect a userâ€™s selective exposure. The application can present various types of articles (e.g., science and political news) that align in stance with individual usersâ€™ attitudes on societal issues covered in these articles, predetermined by a questionnaire. Combinations of article types with source and popularity cues are systematically rotated; the sequence of articles displayed is randomized to avoid sequence effects. Usersâ€™ selective exposure is recorded by the website and stored; the platform records the time users spend on each article, the sequence each article is accessed in, and the political leanings of the individual and responses to the articles. The application allows for a multitude of research designs to answer a variety of research questions in the communication science field.

Results: Data and results from an exemplar data collection will be presented.

Conclusion: Data collected with this web application allows testing hypotheses on what drives selective exposure and how users are in turn affected by the selected messages, which speaks for example to processes such as political polarization, as well as new technological affordances in online contexts.