



**UTAH ACADEMY
of
Sciences, Arts & Letters**

Established 1908

Annual Conference

April 7, 2017

**Utah Valley University
Orem, Utah**

**UTAH ACADEMY OF
SCIENCES, ARTS & LETTERS**
Annual Conference, Friday, April 7, 2017

9:00 a.m. - 10:00 a.m.

Check-in & Registration

Ragan Theatre, Sorensen Center (2nd floor)

10:00 a.m. - 10:05 a.m.

Utah Valley University Welcome: Frederick White, Associate Vice President, Engaged Learning

Ragan Theatre, Sorensen Center

10:05 a.m. - 10:15 a.m.

Welcome: Jonathan Westover, UASAL President

Ragan Theatre, Sorensen Center

10:15 a.m. - 10:30 a.m.

Distinguished Service Award Presentation

Dr. Jean B. Cheney, Utah Humanities

John and Olga Gardner Prize Presentation

Dr. Margaret Pabst Battin, University of Utah

Ragan Theatre, Sorensen Center

10:30 a.m. - 11:15 a.m.

O.C. Tanner Lecture

Enlightenment in Dark Times: Literary Responses to Unsettling Events in Historical Germany

Dr. Scott Abbott, Utah Valley University

Ragan Theatre, Sorensen Center

11:15 a.m. - 11:45 a.m.

Poster Session

11:45 a.m. - 12:45 p.m.

Lunch

Centre Stage, Sorensen Center (1st floor)

1:00 p.m. - 2:30 p.m.

Division Breakout Sessions (I)

See "Division Session Room Assignments"

2:30 p.m. - 3:00 p.m.

Refreshment Break

Outside Ragan Theatre, Sorensen Center

3:00 p.m. - 4:30 p.m.

Division Breakout Sessions (II)

See "Division Session Room Assignments"

5:00 p.m. - 6:00 p.m.

UASAL Board Meeting

Room 105B, Sorensen Center

DIVISION SESSIONS

Room Assignments

POSTER SESSION: SC 206C

ARTS: SC 214

BIOLOGICAL SCIENCES

SESSIONS A: SB 279

SESSIONS B: SB 276

BUSINESS

SESSIONS A: SC 213A

SESSIONS B: SC 213B

EDUCATION: SB 132

ENGINEERING: SB 074

HUMANITIES/PHILOSOPHY/FOREIGN LANGUAGE

SESSIONS A: SC 206A

SESSIONS B: SC 206B

LETTERS LANGUAGES/ LITERATURE: SC 206C

PHYSICAL SCIENCES

SESSIONS A: SB 246

SESSIONS B: SB 260

SOCIAL SCIENCES

SESSIONS A: SC 206G

SESSIONS B: SC 206H

To ACCESS WIRELESS INTERNET:

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2. Enter your university credentials for the username and password.
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O.C. Tanner Lecture

“Enlightenment in Dark Times: Literary Responses to Unsettling Events in Historical Germany”

Dr. Scott Abbott

Professor of Integrated Studies, Humanities and Philosophy
Utah Valley University

Scott Abbott is Professor of Integrated Studies, Humanities, and Philosophy at Utah Valley University. His Ph.D. in German Studies is from Princeton University. Books include *Fictions of Freemasonry: Freemasonry and the German Novel*, two books with Serbian novelist Žarko Radaković—*Repetitions and Vampires* & *A Reasonable Dictionary*, and a book with botanist Sam Rushforth—*Wild Rides and Wildflowers: Philosophy and Botany with Bikes*. A book of fraternal meditations after the death of his brother John of AIDS, *Immortal for Quite Some Time*, was published by the University of Utah Press in 2016. A book about the construction of meaning of barbed wire, written with his wife, historian Lyn Bennett, will appear in the fall of 2017 with Texas A&M University Press. He has translated several works by the contemporary Austrian writer Peter Handke, and with geneticist Daniel Fairbanks he recently published a Darwinized translation of Gregor Mendel’s article “Experiments on Plant Hybrids.”

John & Olga Gardner Prize

Dr. Margaret Pabst Battin

The Gardner Prize is awarded annually for exceptional achievement by an academic professional in Utah

Margaret Pabst Battin (nicknamed Peggy) is Distinguished Professor of Philosophy and Adjunct Professor of Internal Medicine, Division of Medical Ethics, at the University of Utah. She is a graduate of Bryn Mawr College, and holds an M.F.A. in fiction-writing and a Ph.D. in philosophy from the University of California at Irvine. The author of prize-winning short stories, she has authored, co-authored, edited, or co-edited some twenty books, among them a study of philosophical issues in suicide; a scholarly edition of John Donne's *Biathanatos*; *Puzzles About Art*, a volume of case-puzzles in aesthetics; *Ethics in the Sanctuary*, a study of ethical issues in organized religion; and a collection of her essays on end-of-life issues, *The Least Worst Death*. She has also been engaged in research on active euthanasia and assisted suicide in the Netherlands. In 1997 she received the University of Utah's Distinguished Research award, and in 2000, she received the Rosenblatt Prize, the University of Utah's most prestigious award. She was named Distinguished Honors Professor in 2002-03. A second collection of her essays (and fiction) on end-of-life issues is entitled *Ending Life* (Oxford 2005). She is the lead author of two multiauthored projects, *Drugs and Justice* (Oxford, 2008) and *The Patient as Victim and Vector: Ethics and Infectious Disease* (Oxford, 2009). She is the general editor of *The Ethics of Suicide: Historical Sources* (Oxford 2015), an extensive sourcebook coupled with an online Digital Archive hosted by the academic library at the University of Utah <ethicsofsuicide.lib.utah.edu>. She is currently completing *Sex & Consequences*, a book on large-scale reproductive issues, including world population growth and reproductive rights. She is also at work on a set of novel considerations about urban design in the light of ecological, environmental, resource-use, and social issues, called "How to Live in an Italian Hill Town and Still Get to Walmart." She has been named one of the "Mothers of Bioethics."

Distinguished Service Award

Dr. Jean B. Cheney

The Distinguished Services Award is given to an academic professional for exceptional services to the higher education community in Utah.

Jean Cheney joined the staff of Utah Humanities in 1997 after a career teaching literature and writing in colleges and high schools around the country. In 2005, she founded the Venture Course, a free, college-level humanities course for adults "of modest means who dare to dream," modeled on the Clemente Course begun in New York City by Earl Shorris in 1995, and awarded a 2014 National Humanities Medal by President Barack Obama. Venture is offered by Utah Humanities in several communities, through partnerships with local colleges and universities.

In 2013, under her leadership, Utah Humanities began the high school Clemente Course as a pilot at East High School in Salt Lake City. Clemente is an interdisciplinary humanities course, taught in the high school by college faculty, with the goal of encouraging underserved students to enroll in college. In 2015, Jean was awarded a Fulbright grant to teach literature at Southwestern University in Chongqing, China, and to lecture around China about American environmental writing. She is the lead author of *Hope, Heart, and the Humanities*, a book about the beginning of the Venture Course in Utah, published by the University of Utah Press in 2016. She has a Ph.D. in English from the University of California, Davis, and a M.A.T. from Duke University.

Journal of the Utah Academy Publication Policy

The Journal of the Utah Academy of Sciences, Arts, and Letters publishes works in all of the fields of study encompassed in the Academy's mission. Papers published in The Journal of the Utah Academy of Sciences, Arts, and Letters are drawn from papers presented by members in good standing at the annual conference of the Utah Academy. To qualify for publication, the papers must be recommended through a refereeing system.

Presenters are encouraged to publish their paper in The Journal of the Utah Academy. The Journal's criteria are that a submission is (1) fresh, meaningful scholarly insight on its subject; (2) readable and well written; and (3) of general interest for an academic readership beyond the author's field.

If you wish your paper to be considered for publication in The Journal, please submit a Microsoft Word document to the section editor of the appropriate section by June 1st 2017. Contact information for the section editors is available on the Utah Academy's website (www.utahacademy.org.)

The Journal of the Utah Academy is a refereed journal. Editorial responses will be forthcoming after the resumption of school the following fall when referees have returned their comments to the division chairs.

Papers should be between ten and twenty double-spaced pages. Detailed instructions to authors are available at <http://www.utahacademy.org/>.

Poster Session

Session Chair: R. Steven Turley
Brigham Young University

The Effect of Hydrogen Peroxide on Artemia

Jerome Austin Johnson, Weber State University

Utilization of complementary and alternative medicines to remedy stress by Utah Valley University students

Cassandra Fenton, Sean Finley, Cherice Neeley, Jordan White, Utah Valley University

An Analysis of the Prevalence of Essential Oil Use and its Correlation with Demographic Factors

Hayden Kallas, John Horspool, Michael Dodson, Taylor Daniels, Utah Valley University

GM detection technologies and GM adoption in different markets: A literature review

Jordan Byrd, Utah Valley University

Synergistic efficacy of amphotericin B and essential oils against fungal strains known to cause Mucormycosis

Karaleen Anderson, Utah Valley University

Effect of Religious Authority on Acceptance of Evolutionary Theory

Hendrik Ombach, Weber State University

*Sequence Variation of the CytB Gene in *Crocodylus acutus* populations in Pacific Costa Rica*

Kyle Javenes, Southern Utah University

Effects of genetically vs non-genetically modified baby food on fruit flies

Donald Long Jr., Jaron Matsunaka, Southern Utah University

Use of Fish Oils in Complementary and Alternative Medicine

Riley Bastian, Allen Carlson, Jake Wood, Utah Valley University

The Effect of Occupational Licensing on Women in Utah

Jacob Caldwell, Colton Cowan, Olivia Mackelprang, Fiona Harrigan, Utah State University

Arts

Division Chair: Angela Banchemo-Kelleher
Utah Valley University

SESSION II

Session Leader: Angela Banchemo-Kelleher

- 3:00 p.m. *The American Narrative and Fancy Free*
Tiffany Wyson, Weber State University
- 3:22 p.m. *A Case Against the Institutionalization of the Full Art Process*
Christopher Lynn, Brigham Young University
- 3:44 p.m. *Arts in Education: A Means Reforming Failing Schools*
Kathleen Bunker Sheffield, Brigham Young University
- 4:06 p.m. *Intellectual Theft or Creative License? Copyright in the Arts*
Courtney Davis, Utah Valley University

Biological Sciences

Division Chair: Laurie Mauger
Southern Utah University

SESSION IA

Session Leader: Laurie Mauger

- 1:00 p.m. *The Effect of Acetaminophen on Catalase Activity in Mouse Liver*
Emily James, Southern Utah University
- 1:15 p.m. *A restriction site (in silico) reevaluation of a chloroplast gene phylogeny for a common fern group: Restriction site data can still provide new insights*
William Speer, Salt Lake Community College
- 1:30 p.m. *Does the distribution of private dentists in Utah, USA match population need? A high resolution GIS analysis.*
Emily Irwin, Utah Valley University
- 1:45 p.m. *Microbial Analysis of Art Byproduct Waste Streams*
Gabriel McKay, Weber State University
- 2:00 p.m. *Inhibition of Lactobacillus wasatchensis by bio-protective lactic acid bacteria cultures*
Aaron Lavigne, Sam Smith, Craig Oberg, Isaac Bowen, and Don McMahon, Weber State University
- 2:30 p.m. Break

SESSION IB

Session Leader: Erin O'Brian

- 1:00 p.m. *Kava: An ethnobotanical monograph of Piper methysticum*
Trevor Chamberlain, Utah Valley University

- 1:15 p.m. *Taxonomy of Penstemon leonardii and Penstemon platyphyllus (Scrophulariaceae)*
Dr. Stephen L. Clark, Weber State University
- 1:30 p.m. *Selective primer development for rapid detection of the gas-producing non-starter bacterium Lactobacillus wasatchensis*
Michele D. Culumber, Weber State University
- 1:45 p.m. *Population dynamics of bat fleas in Great Basin Desert caves.*
Robert L. Bossard, Bossard Consulting
- 2:30 p.m. Break

SESSION II

Session Leader: Laurie Mauger

- 3:00 p.m. *Characterization of Lactic Acid Bacteria Isolated From Over the Counter Probiotic Products*
Rusty Crofts, Weber State University
- 3:15 p.m. *Development of Assays to Study Inhibition of Pathogens by Lactic Acid Bacteria and their Hemolytic Ability*
Brody Gibson, Weber State University
- 3:30 p.m. *A Survey of Religion: Its Development, Neurophysiology, and Current Impacts*
Bryan Casselman, Salt Lake Community College
- 3:45 p.m. *Identification and Characterization of a New Bacillus Species*
Adriana Christensen, Dixie State University
- 4:00 p.m. *The Effects of Different Proportions of Acute Exposure of Ethinyl Estradiol on Giant Zebra Danios (Devario aequipinnatus)*
A.J Edwards, Southern Utah University

Business

Division Chair: Taowen Le
Weber State University

SESSION IA

Session Leader: Taowen Le

- 1:00 p.m. Welcome
- 1:10 p.m. *MDs or MBAs: Who is better at leading medical device companies?*
David Benson, James Brau, Derek Phelps, Brigham Young University
- 1:30 p.m. *Validating Prior Learning Assessment Utilizing a Competency-Based Model*
Jerry A. Van Os, Westminster College
- 1:50 p.m. *Pay Per Click Geotargeting Advertising Campaign*
Conner Jasperson, Paige Gardiner, Utah Valley University
- 2:10 p.m. *Chinese Initial Public Offering Roadshows and Agreement Between Managers and Investors*
Jim Brau, Jim Cicon, Shibo Bian, Brigham Young University
- 2:30 p.m. Break

SESSION IB

Session Leader: Jonathan Westover

- 1:00 p.m. Welcome
- 1:10 p.m. *Is Now the Time to Face the LIFO Issue?*
Jennifer Harrison, Dara Hoffa, Chelsea Dye, Westminster College
- 1:30 p.m. *Equity Issuance of Health Care Firms after the 2007 Market Crash and the 2010 Affordable Care Act*
Jim Brau, Troy Carpenter, Brigham Young University
- 1:50 p.m. *A Tsunami of Need: Autism Awareness in Hiring and the Workplace*
Jonathan Westover, Teresa Cardon, Norman Wright, Ronald Miller, Kathryn Hughes, Rebecca Garrido, Utah Valley University
- 2:10 p.m. *Just-In-Time Inventory Supply Chain Management in Small Manufacturing Firms*
Austin Nordblad, James C. Brau, Kohler Callis, Brigham Young University
- 2:30 p.m. Break

SESSION IIA

Session Leader: Taowen Le

- 3:00 p.m. *White Collar Crime: Attitudes and Perceptions of Utah College Students*
Jill O. Jaspersen, Utah Valley University
- 3:20 p.m. *A Hedonic Pricing Analysis of the Utah Country Single-Family Residential Housing Market*
Jeremy Endicott, James C. Brau, Barrett Slade, Brigham Young University
- 3:40 p.m. *A Metastudy of Microfinance Academic Scholarship from 2004-2016*
Jim Brau, Mary Harrast, Mary Harrast, Brigham Young University

SESSION IIB

Session Leader: Jonathan Westover

- 3:00 p.m. *Fostering Student Engagement through understanding and internalizing the mission statement and values of extra-curricular organizations*
Ryan Stephenson, Colt Rothlisberger, Jon Westover, Utah Valley University
- 3:20 p.m. *REIT SEO Underpricing and Prospectus Strategic Tone*
Jim Brau, Troy Carpenter, Brigham Young University
- 3:40 p.m. *The Relationship Between Traditional and Noninterest Income at Commercial Banks*
Richard Parsons, James Nguyen,, Texas A&M University Texarkana
- 4:00 p.m. *Budget Habits of College Students: An Empirical Analysis of Expectations and Realizations*
John Talmage Brown, James C. Brau, Brigham Young University

Education

Division Chair: Debora Escalante
Utah Valley University

SESSION I

Session Leader: Debora Escalante

- 1:00 p.m. *Entering Research for Social Justice 101: A Critical and Experiential STEM Course for Latina/Latino Undergraduates*
Shireen Keyl, Utah State University
- 1:30 p.m. *Pushing Back: Meaningful Evidence of Teacher Quality*
Mary Sowder, Utah Valley University
- 2:00 p.m. *An Empirical Analysis of the Determinants of College Student Major Choice*
Emily Johnson, James C. Brau, Brigham Young University
- 2:30 p.m. Break

SESSION II

Session Leader: Debora Escalante

- 3:00 p.m. *Using Community-Engaged Experiential Learning Pedagogy to Engage Millennial Students*
Jonathan Westover, Utah Valley University
- 3:30 p.m. *Pre-service teachers' conceptions of differentiation in Mathematics lessons: theory and practice*
Sue A .Womack, Utah Valley University
- 4:00 p.m. *Instructional Designer Values as Revealed Through the Use of Inscriptions*
Rebekah Inez Brau, Brigham Young University

Engineering

Division Chair: Doran Baker
Utah State University

SESSION I

Session Leader: Doran Baker

- 1:00 p.m. *Simple Strength of Material Experiment to Evaluate the Deflection of a Beam*
Jacob W. Carter, Dr. Ali Siahpush, Southern Utah University
- 1:15 p.m. *A Fundamental Look at the Unique Properties of Copper*
Casey Cooper, Jacob Carter, Justin Christensen, Southern Utah University
- 1:30 p.m. *Encoding Data on Photographic Media using OFDM*
Fon Brown, Ethan Albretson, Weber State University
- 1:45 p.m. *Effect of Different Potential Combinations on Characteristics of Nanoparticles formed by Dewetting*
T. McKay Stoker, Dr. Nick Roberts, Utah State University
- 2:00 p.m. *Mesospheric Altitude Profile Anomalies Observed by SABER Space Instrument*
Gene Ware, Brian Simons, Doran Baker, Utah State University
- 2:30 p.m. Break

Humanities, Philosophy, & Foreign Language

Division Chair: Jason Goltz

Westminster College

SESSION I

Session Leader: Jason Goltz

- 1:00 p.m. *Schwarze Vogelmenschen: The Tuskegee Airmen and Charles Sumner Stone, Jr. through an Interpretive Biography Paradigm*
Thomas C. Terry, Utah State University
- 1:20 p.m. *Laying Duck Eggs: The Americanization of Scandinavian Immigrants in Utah*
Brian J. Simons, Doran Baker, Utah State University
- 1:40 p.m. *Cracking the Stained Glass Ceiling: Emmeline B. Wells and her Strategic Arrangement Patterns*
Tiffany Kinney, University of Utah
- 2:00 p.m. *Stopping the Bleeding: Guatemala's National Anthem '¡Guatemala feliz!'*
Douglas C. Jensen, Utah Valley University
- 2:30 p.m. Break

SESSION IIA

Session Leader: Jason Goltz

- 3:00 p.m. *Dissolving Harrop's Semantic Paradox Concerning Moral Error Theory*
Melvin A. Davila Martinez, Utah Valley University
- 3:30 p.m. *The Ethicality of the Corporate Goal to Maximize Shareholder Wealth*
Jim Brau, Hannah Brau, Brigham Young University
- 4:00 p.m. *Sex and Politics: Gendered Power Structures in the Medieval Romance Tradition*
Audrey N. Saxton, Brigham Young University

SESSION IIB

Session Leader: TBA

- 3:00 p.m. *Politics in Children's Literature: The Case of Spanish Novelist Belén Gopegui*
Ana M. Aguilera, Utah Valley University
- 3:30 p.m. *English Only vs Bilingual Education: The Path to Good Health*
Jorge Nisguritzer, Utah Valley University
- 4:00 p.m. *Out from the Trees: Crusader Rustics in The Book of Contemplation*
Spencer C. Woolley, University of Utah

Letters, Language, & Literature

Division Chair: Keith Lawrence
Brigham Young University

SESSION I: Love, Equality, Chaos, and Other Likely and UnLikely Literary Subjects

Session Leader: Keith Lawrence

- 1:00 p.m. *Needing More Than 'Room': Virginia Woolf and the Equality of Difference*
Elizabeth DeBetta, Utah Valley University
- 1:20 p.m. *Radical Innocence: Romanticism, Whitman, and the Transcendent Power of Love*
John Schwiebert, Weber State University
- 1:40 p.m. *Fractal Theory and London Chaos in A Study in Scarlet as Keys to Understanding Holmes's Genius*
Holly Boud, Brigham Young University
- 2:00 p.m. Q&A/Discussion
- 2:30 p.m. Break

SESSION II: Displacement and Violence in Transnational British and American Literature

Session Leader: Keith Lawrence

- 3:00 p.m. *"Shiva Dances On": Rediscovering the Novels of L. H. Myers*
Sean Jenkins, Weber State University
- 3:20 p.m. *Shattered: How Loss and Grief Become Relational Terrorism in Mahajan's The Association of Small Bombs*
Malori Crossley, Weber State University
- 3:40 p.m. *The Dickens Curse; or, Charles Dickens' 1842 Visit to Cairo, Illinois*
Todd Goddard, Utah Valley University
- 4:00 p.m. Q&A/Discussion

Physical Sciences

Division Chair: Chris Monson
Southern Utah University

SESSION IA: PHYSICS

Session Leader: Brandon Wiggins

- 1:00 p.m. *Optimization of Broadband Multilayer Mirrors via a Genetic Algorithm*
Michael Greenburg, Steven Turley, Brigham Young University
- 1:22 p.m. *Smoothed Particle Hydrodynamics Simulations of Proto-Planetary Collisions in the Early Solar System*
Morgan Taylor, Brandon Wiggins, Southern Utah University
- 1:44 p.m. *Effects of Roughness on Reflection of Monochromatic Light*
Spencer Thevenin, Steve Turley, Brigham Young University

2:06 p.m. *Smoothed Particle Hydrodynamics Modeling of Double White Dwarf Mergers*
Brandon Wiggins, Jan Staff, Wesley Even, Southern Utah University

2:30 p.m. Break

SESSION IB: CHEMISTRY

Session Leader: Chris Monson

1:00 p.m. *Evaluation of the Stereochemical Selectivity of the Nucleophilic Addition Reaction of the Menthylmagnesium Chloride Grignard Reagent with Phenylisocyanate*
Myla R. Pereira, Rebecca L. Maedgen, Nathan S. Werner, Southern Utah University

1:22 p.m. *Preventing Oxidation in Aluminum for EUV-reflectance with Cadmium and Zinc*
Stephanie Thomas, Brigham Young University

1:44 p.m. *Migration of Lipids in a Supported Lipid Bilayer*
Douglas Hutchinson, Southern Utah University

2:30 p.m. Break

SESSION IIA: ENVIRONMENTAL

Session Leader: Brandon Wiggins

3:00 p.m. *China's Environmental Resettlement: Controversy and Complexity*
Megan Raines, Utah Valley University

3:22 p.m. *Synthesis and Characterization of Lead- and Tin-based Solar Cells*
Heather Browning, Andrew Sandoval, Nick Allen, Meagan Parker, Dr. Kirsten Rabosky, Dr. Brandon Burnett, Weber State University

3:44 p.m. *Renewable Energy Insights through Hydrogen Sulfide Oxidation*
Matthew Wilkinson, Justin Talbot, J.D. Herr, Sarah Floris, Ryan. Steele, University of Utah

4:06 p.m. *Waste and Cost Reduction by Reprocessing Used Motor Oil into a Synthetic Diesel Fuel*
J. Kevin Shurtleff, Kyle Sweetman, Austin Beatridge, Ryan Bernal, Utah Valley University

SESSION IIB: PHYSICAL SCIENCE TECHNOLOGY

Session Leader: Chris Monson

3:00 p.m. *Development of a Low-cost PDMS Modular Microfluidic Device for STR Analysis of Genomic DNA*
Sharla Winn, Dr. Chris Monson, Dr. Jackie Grant, Southern Utah University

3:22 p.m. *How optical spacer layers could help in obtaining optical constants of highly absorbing materials in the extreme ultraviolet*
David Allred, R. Steven Turley, Stephanie Thomas, Alexandra V. Davis, Margaret Miles, Brigham Young University

3:44 p.m. *New 4-Polytopes Found by Closest Packing of Spheres and Tessellation in 4-D Space*
Chin-yah Yeh, Salt Lake Community College

Social Sciences

Division Chair: Daniel Poole
Salt Lake Community College

SESSION IA

Session Leader: Spencer Blake

- 1:00 p.m. *A Survey of Religion: Its Development, Neurophysiology, and Current Impacts*
Bryan Casselman, Salt Lake Community College
- 1:20 p.m. “*Determined to Make Righteous Homes*”: *LDS expressions of masculinity and family formation*
Warren Jensen, University of Utah
- 1:40 p.m. *Religious Detachment among Utah Mormons: Does the Internet Play a Role?*
Rick Phillips, University of North Florida
- 2:10 p.m. *Getting it Right - A Case Study of a Six-Month Sabbatical at Home and Abroad*
Peter L. Kraus, University of Utah
- 2:30 p.m. Break

SESSION IB

Session Leader: Taylor Greenwell

- 1:00 p.m. *Populism and Power*
Dallas Blackburn, Salt Lake Community College
- 1:20 p.m. *Yoga and Addiction Recovery*
Courtney Strong, Salt Lake Community College
- 1:40 p.m. *The Economic Roots of Political Instability in the MENA Region*
Taylor Greenwell, Weber State University
- 2:10 p.m. *Regressive Effects of Environmental Regulation*
Matthew Clint Bisbee, Michael Jensen, Utah State University
- 2:30 p.m. Break

SESSION IIA

Session Leader: Spencer Blake

- 3:00 p.m. *The Winner-Take-All Electoral College*
Jamie Nelson, Salt Lake Community College
- 3:20 p.m. *Social Policy: A Guide for Social Scientists in the Academy*
Ty B. Aller, Dr. Kathy Piercy, Utah State University
- 3:40 p.m. *How does Ranked-Choice Voting impact incumbents?*
Logan Hemmert, Dr. Ryan Yonk, Utah State University
- 4:10 p.m. *A librarian runs for political office (or Cincinnatus looks outside the Ivory Tower)*
Peter L. Kraus, University of Utah

SESSION IIB

Session Leader: Taylor Greenwell

- 3:00 p.m. *Implementing CUR recommendations: Expanding the high impact practice of undergraduate research within the curriculum*
Chantelle Shapcott, Justin Felkins, Brooke Bradford, Jessica Hill, Bryan Dalley,
Utah Valley University
- 3:20 p.m. *Veteran's perception of the Department of Veterans Affairs*
Catherine Stoddard, Dr. Barrett Bonella, Dr. Corina Tadehara, Weber State University
- 3:40 p.m. *Space-time Signatures in Laws, Societies and Conflicts*
Shadman Bashir, Dixie State University
- 4:10 p.m. *How Does Materialism Influence Financial Problems in Marriage?*
Hannah-Lee Brau, Brigham Young University

Abstracts

POSTER

Presenter: Kyle Javenes

Other Authors: Jonathan Karpel, James Spotila, Laurie Mauger

Affiliation: Southern Utah Unveristy

Presentation Title: Sequence Variation of the CytB Gene in *Crocodylus acutus* populations in Pacific Costa Rica

Abstract: Sequences of mitochondrial genes are useful in studying phylogeography and genetic differentiation in populations of threatened and endangered species. We determined the genetic structure of the American Crocodile (*Crocodylus acutus*) populations along the Pacific coast of Costa Rica for the CytB mitovhondrial gene using the primer pair L14849, and H15453. Crocodile samples were collected from 11 localities along the Pacific coast of Costa Rica. Editing of sequences was done through BioEdit 7.0.9.0. Alignments were performed with ClustalW on Mega 7.0.18. We constructed neighbor-joining (NJ) and maximum likelihood (ML) trees for the mitochondrial regions. We estimated the mitochondrial divergence across geographical locations for crocodiles in pacific Costa Rica. Preliminary data support minimal divergence and independent evolution in the sampled populations. A total of 8 haplotypes were sequenced.

Presenter: Jerome Austin Johnson

Other Authors: Nicole Berthelemy

Affiliation: Weber State University

Presentation Title: The Effect of Hydrogen Peroxide on *Artemia*

Abstract: The brine shrimp *Artemia* inhabit the Great Salt Lake, a harsh environment where stresses, including oxidative stress, are common. The enzymatic pathways enabling a species to cope with oxidative stress are universal. Some of those enzymes are catalase (CAT), superoxide dismutase (SOD), peroxidase (PER) and glutathione peroxidase (GLU PER). We hope to measure these enzymes within *Artemia* to understand how *Artemia* handles this type of stress. We exposed *Artemia* to 0, 0.5, 1, 2, 5 and 10 ml of hydrogen peroxide (H₂O₂) per 100 ml sea-water over the span of seven days. Mortality was 100% in shrimp exposed to 10 and 5 ml H₂O₂ for the period of 72 h as well as those exposed to 2 ml by the 7th day. The survival rate was 100% for our control, 91.7% for .5 ml, 66.7% for 1 ml and 8.3% for 2 ml when exposed for 3 days. We tested shrimp tissue samples for CAT, SOD, PER and GLU PER concentrations utilizing spectrophotometry, polyacrylamide electrophoresis treated with enzymatic stains, and a general protein profile. A spectrophotometry assay for CAT showed no difference in activity between the samples. While the gels showed no definitive trend in any of the enzymes, PER showed bands 1.5x the strength of the controls on days 1 and 2 at 1 mL and 2mL respectively. The protein profile gave the best evidence for a trend at the increased concentrations. A protein of 40 kD increased noticeably on days 2 and 3. Currently, tests using primers to identify levels of gene expression are being performed to support or defy our observations. In the event that evidence mounts supporting a lack of activity in these known enzymes, continued research will be done into the presence of heat shock proteins and identifying other trends within the general protein profile.

Presenter: Cassandra Fenton, Sean Finley, Cherice Neeley, Jordan White

Affiliation: Utah Valley University

Presentation Title: Utilization of complementary and alternative medicines to remedy stress by Utah Valley University students

Abstract: The use of complementary and alternative medicines (CAM) has been utilized throughout human history as a primary way to treat illness and encourage health and well-being. CAM is a group of health-related systems that is used other than mainstream health care. CAM focuses on the individual by promoting preventative practices and self-care. Despite the positive nature of CAM, the development of modern synthesized medications has caused people to abandon traditional CAM medicines. As the world becomes a more stressful place to survive in, people have developed personal ways to deal

counteract stress. One of the most stressful environments for adults in the United States is college, due to the pressures of students to perform well on examinations and assignments. Because of this, we evaluated the ways in which Utah Valley University (UVU) students deal with their stress, particularly whether they use complementary and alternative medicines. For this research, semi-structured interviews with consent were conducted on 60 randomly chosen UVU students, ages 18-64, to record their ways of remedying stress. The results of these interviews were recorded and analyzed to determine what the most common type of CAM is used, such as a type of plant or activity, and the efficacy of using CAM to deal with stress. Our null hypothesis is that students do not use CAMs to deal with their stress.

Presenter: Jordan Byrd

Other Authors: Pauli Alin

Affiliation: Utah Valley University

Presentation Title: GM detection technologies and GM adoption in different markets: A literature review

Abstract: Many genetically modified (GM) organisms are currently allowed to be grown and sold in markets such as Canada, India, New Zealand, and the United States. For more markets to adopt the legal and institutional frameworks under which GMs are allowed to be grown and sold, GM based food/feed products should increase their traceability (i.e. so one could trace a product to its source). To achieve traceability, GM content has to be reliably detected from each food/feed product. While a number of GM detection methods currently exist (e.g. PCR, DNA walking, biosensors, ELISA, immune-PCR), there is relatively little research on whether the usage of a particular GM detection technology might be better suited to increase the adoption of legal and institutional frameworks that would allow GMs to be grown and sold. To begin to address this lack of research, this paper uses a narrative literature review method to synthesize recent research on GM detection technologies and legal and institutional frameworks governing GM adoption. The synthesis will contribute to the emerging interdisciplinary literature on GM detection technologies and public policy.

Presenter: Karaleen Anderson

Other Authors: Dr. Olga Kopp

Affiliation: Utah Valley University

Presentation Title: Synergistic efficacy of amphotericin B and essential oils against fungal strains known to cause Mucormycosis

Abstract: Mucormycosis is the third most common invasive fungal infection after Candidiasis and Aspergillus. Because of the severity and the high mortality rate of this infection the disease is considered to be highly important and emerging. The current use of Amphotericin B to treat Mucormycosis can have many adverse side effects. Including, chills, fever, headaches, loss of appetite, muscle pain, nausea, and weight loss, as well as fatal syndromes such as hepato and nephrotoxicity. Due to these adverse effects, it is important to study new compounds that have potent antifungal application. An intriguing possibility is the combination therapy of Amphotericin B with essential oils. This combination could potentially allow clinicians to lower the dose of Amphotericin B, thus reducing the side effects while still maintaining and utilizing the effective antifungal properties of both the oil and the drug. Essential oils and their antifungal properties have been thoroughly studied, however, little research has been done on the synergetic effect of essential oils and Amphotericin B on the three most common species isolated in mucormycosis infections, namely *Rhizopus oryzae*, *Abisidia corymbifera* and *Rhizomucor Pusillus*. This study aims to investigate the possible synergistic effects between selected essential oils and the antifungal compound amphotericin B in an effort to find alternatives for the high dose of amphotericin B that is currently used to treat mucormycosis.

Presenter: Hendrik Ombach

Other Authors: Eric Trost, Dr. Aaron Ashley

Affiliation: Weber State University

Presentation Title: Effect of Religious Authority on Acceptance of Evolutionary Theory

Abstract: In religious contexts, God is viewed as an ultimate authority, leading many people to look to religious leaders and scripture as a source of knowledge. Consequently, many religious individuals are resistant to epistemological systems (e.g., scientific methods) that are in direct conflict with their religious beliefs. Due to the direct conflict with the creation story in the opening chapters of Genesis, the theory of evolution may be especially hard for religious individuals to accept. This study examined changes in acceptance of evolution due to statements endorsing evolution made by religious authorities that adhere to common religious denominations within the United States. These religious authorities include the Pope of the Catholic Church as well as 13,360 U.S. Christian leaders who have signed “The Clergy Letter” an open letter advocating for evolution. In this study, participants completed the Inventory of Student Evolution Acceptance (I-SEA) (Nadelson, 2012) to assess acceptance of evolution, followed by understanding of natural selection using the Conceptual Inventory of Natural Selection (CINS) (Anderson, 2002). Subsequently, participants were randomly assigned to an authority condition where they were given the pro-evolution statement from the religious authorities, or an unrelated article serving as a control. Following the authority condition, participants were shown either videos explaining the evidence for evolution or an unrelated video as control. Acceptance of evolution was then again assessed via the I-SEA to test for changes in acceptance. It is expected that participants will be more accepting of evolution as a function of the religious authority appeal, and that evidence will not be a successful method to increase acceptance of evolution.

Presenter: Hayden Kallas, John Horspool, Michael Dodson, Taylor Daniels

Other Authors: Hayden Kallas, John Horspool, Michael Dodson, Taylor Daniels

Affiliation: Utah Valley University

Presentation Title: An Analysis of the Prevalence of Essential Oil Use and its Correlation with Demographic Factors

Abstract: The population of Utah County has a reputation for the use of essential oils as alternatives or supplements to clinical medicine. Our study investigates the correlation of major demographic factors within this population with the use of essential oils to determine if there are any notable trends. Our study consists of 60 interviews with 30 conducted on Utah Valley University’s campus and the other 30 conducted in public areas around Orem Utah. The data was collected and converted into numerical values which were analyzed using a variety of statistical tests. The results of this research will be presented by poster, correlating the demographics with the use of essential oils as complementary and alternative medicine.

Presenter: Donal Long Jr and Jaron Matsunaka

Other Authors:

Affiliation: Southern Utah University

Presentation Title: Effects of genetically vs non-genetically modified baby food on fruit flies

Abstract: Genetically modified organisms (GMOs) are a hot topic of debate in political circles, as well as, the general population. There is no consensus on the safety of these products and research performed on GMOs is generally geared toward their agricultural efficacy rather than safety. There is surmounting evidence in the emerging realm of epigenetics that dietary patterns can affect multi-cellular organisms on the phenotypic level. This project was designed around this concept with fruit flies being chosen because of their gene similarities to humans. Baby food was selected as the food of choice because of its implications on the essential development of the infant. Three treatment groups (flies fed on USDA organic soybean medium, flies fed on USDA organic soybean media with the addition of non-GMO baby food, and flies fed on USDA organic soybean media with the addition of GMO baby food) that each contained ten replicates were cultured. Behavioral traits were assessed for each treatment group and were indicated as cocoons formation, mortality, and flies emerged.

Presenter: Riley Bastian, Allen Carlson, Jake Wood

Other Authors: Dr. Olga R. Kopp

Affiliation: Utah Valley University

Presentation Title: Use of Fish Oils in Complementary and Alternative Medicine

Abstract: Fish oils contain two specific types of Omega-3, eicosapentaenoic acid (EPA) and docosahexaenoic acid (DHA), which are both polyunsaturated fatty acids. These fatty acids make up some of the main health benefits from fish consumption. Fish oils are commonly used in many fields of medicine; they are recommended by physicians and dietitians as a form complementary and alternative medicine to treat many different ailments and disorders. Notable benefits of consumption of EPA and DHA include: decreased mortality due to coronary heart disease, maintain normal brain and visual function, and decreased joint pain due to arthritis, among other possible benefits. This study was done to assess of the demographics, uses, popularity and effectiveness of these oils in Utah and Salt Lake counties. Samples were obtained for this study through an online questionnaire which was submitted, at random, on various social media websites and email lists. Researchers are still gathering data to eliminate bias as much as possible; of the total respondents thus far (n=64), 73.4% (n=47) are from Utah County, 20.3% (n=13) are from Salt Lake county, and 6.3% (n=4) are from other counties, including out of state respondents. Some of the total participants (n=64), 57.8% (n=37) are taking or have taken fish oils previously. Participants have reported fish oil use for: lower cholesterol, acne, dry eyes, heart health, joint pain, and better overall health. Dosage and compliance appear to be varied between participants. Final results will be presented.

Presenters: Jacob Caldwell, Colton Cowan, Olivia Mackelprang, Fiona Harrigan

Affiliation: Utah State University

Presentation Title: The Effect of Occupational Licensing on Women in Utah

Abstract: All state governments require occupational licenses in order to work in certain fields. Previous research and economic theory suggest occupational licenses are used to restrict the entry of workers into a chosen field, thus lowering the competition in a certain field (Young, 2012). Though costly to the licensed businesses, the lowered competition results in the ability to charge higher prices which may result in a net gain for the licensee (Stigler, 1971; Peltzman, 1976). We collect, analyze, and create an index from data on Utah's licensed occupations to explore how occupational licensing affects women and minorities. In our ordinary least squares regression we focus on price to submit an application, years of training, and cost of necessary exams to determine which fields were most impacted by occupational licensure. We then compare the data we used with the demographic data of workers in those fields. We find that women and minorities are disproportionately affected - meaning they bear more of the costs from occupational licensing than other segments of the population. This suggests laws meant to protect the population can sometimes come at the cost of other segments of the population.

ART ORAL PRESENTATIONS

Presenter: Tiffany Wyson

Affiliation: Weber State University

Presentation Title: The American Narrative and Fancy Free

Abstract: This research argues that there is an American Narrative. Because of the genealogical diversity and abundance of immigration people argue whether there is a cultural narrative unique to the United States of America. Simone de Beauvoir and Jean Genet wrote about the distinctly laid-back behavior of the American soldiers swarming their Paris streets in 1944 (Genne, 83). Their observations of the unique American ways of moving, thinking, interacting, and behaving provide a lens on the American narrative. In addition to being laid-back and charismatic, Americans over time have been considered innovative, hard-working, optimistic, and independent (Banchero-Kelleher, Ortega, Poulson, 319). This narrative seems to be embedded in every aspect of the culture and is especially visible within cultural artifacts, such as film, music and dance. New historicism will be implemented in this research to provide a further understanding of the American narrative and life in the mid-20th century. This theory suggests that national identities emerge from and are shaped by the culture in which

they reside (Tyson, 290). An analysis of cultural artifacts can provide deeper comprehension of cultural characteristics. Dance is a particularly revealing artifact in illuminating American customs, mannerisms, traditions, values, heritage, and aesthetics (Kealiinohomoku, 40). The iconic American ballet, *Fancy Free*, choreographed by Jerome Robbins and premiered in 1944 in New York City, told the tale of three young American Navy sailors leaving for war. A review of written source material along with observation and examination of a video recording of *Fancy Free* and its symbolic “carefree” and “aimless” movement (Genne, 85), through the principles of new historicism, will depict the typical American character that many like Simone de Beauvoir described.

Presenter: Christopher Lynn

Affiliation: Brigham Young University

Presentation Title: A Case Against the Institutionalization of the Full Art Process

Abstract: As art museums seek to reach new audiences and broaden the scope of their education departments, they not only exhibit work, but produce didactic texts, catalogs, timelines, panel discussions, and docent-led tours in an effort to contextualize the art on view. They also often venture into artist video interviews, documentary videos of the work being made and/or installed, studio visits, and artist and curator lectures. By institutionalizing and centralizing the creation, installation, contextualization, and audience conversation, a single academic narrative is created to portray simply what is often a complex and multi-layered artistic and cultural process.

Art can be a difficult, challenging, wild creature. Museums may portray art and its processes as taxidermied artifacts—devoid of life and complexities. Hunted, captured, defanged, domesticated, categorized, and tagged, the art that is then placed on display acts as a shell or husk of what was and what could have been.

This paper compares the display and treatment of artists’ work in formal museums and artist-centered spaces. The performance artist William Pope.L’s work is visceral, sometimes brutal, nuanced, and often tackles issues of race. His work, when displayed at institutions like MOCA in Los Angeles contrasts starkly with the presentation of his community-based project “Pull!” executed with SPACES, an artist-centered organization in Cleveland, OH. Rirkrit Tiravanija’s exhibition “Free” (1992) at the 303 Gallery in New York City functioned as a distributor of free Thai food to visitors. When the work was recreated in 2011–12 at the Museum of Modern Art, not only was the context greatly changed to a full-scale, world-renowned museum, but it came with all the didactic trappings of a museum, thereby softening and sanitizing the experience.

Presenter: Kathleen Bunker Sheffield

Affiliation: Brigham Young University

Presentation Title: Arts in Education: A Means Reforming Failing Schools

Abstract: The United States’ Educational system is currently facing challenges that include rising dropout rates, a narrowing curriculum, over standardized testing, a widening achievement gap, and an increasingly diverse student population. An education rich in the arts is the means by which we can begin to integrate greater learning, literacy, and cultural diversity. The learner should be at the center of our educational system. Knowledge comes from experience, not authority. The arts are rich in experience. Experience can change the brain’s physical structure as well as its functional organization. Assessment driven practices only consider improvement that is easily measured. The arts are marginalized under these practices. Creativity and the arts flourish when governed by democratic principles and are a necessary part of a non-homogenized education. Dismissing the arts as a vital part of education limits the development of the full spectrum of human intelligence. The arts are instrumental in fortifying intrinsic benefits of an individual’s identity, values, feelings, perceptions, opinions, and motivations. In an economic model, teaching and learning are driven by efficiency and rationalism. In an intellectual model, education is seen as an academic ability determined by memorization and the ability to learn by rote. These models assume that intelligence can and should be measured to determine progress. Interpersonal and creative processes are left by the wayside. New technologies of the future require new capacities and abilities. The arts have the potential to encompass and promote the intellectual, cognitive, humanistic, creative, socio-emotional, socio-cultural and socio-economic aspects of education.

Presenter: Courtney Davis

Affiliation: Utah Valley University

Presentation Title: Intellectual Theft or Creative License? Copyright in the Arts

Abstract: Although the parameters and protections of intellectual property law have been debated for centuries, contemporary technology has exacerbated the moral and ethical need to educate students about the rights and restrictions associated with the use of creative content. Our highly visual, content-saturated e-world has produced two alarming trends: first, the mistaken assumption that online content is different from and therefore not protected by the same copyright laws as tangible, printed material, and second, the “who will ever know?” or “catch me if you can” approach to content appropriation. While these attitudes may seem almost harmless in some situations, they threaten to erode the very foundation of copyright law, the purpose of which is to grant an original creator exclusive rights for use and distribution.

This paper explores the ethical responsibility of teaching students of the visual arts about the importance of copyright protections and restrictions. This responsibility stems from the historical purpose of copyright, as well as contemporary applications and (mis)uses. Copyright ethics has been at the forefront of several recent high-profile appropriation cases, which have drawn the art community’s attention to the legal boundaries and moral implications of copyright protection. Because the legal domain does not provide a simple, bright line rule for fair use, the application of ethical principles is more vital than ever to the moral and responsible use of creative work. However, students of the arts often struggle with understanding the basic parameters of copyright law and because of this, the author proposes three moral duties with respect to arts education and intellectual property.

BIOLOGY ORAL PRESENTATIONS

Presenter: Emily James

Other Authors: Esther Harkness, Laurie Mauger, Paul Pillitteri

Affiliation: Southern Utah University

Presentation Title: The effect of acetaminophen on catalase activity in mouse liver

Abstract: Catalase, an enzyme found in high concentrations in hepatocytes, functions in the breakdown of reactive oxygen species. Reactive oxygen species (ROS) are the byproducts of oxidative metabolism and have been shown to cause damage to cells. In this study, mice were injected twice daily for two weeks with dosages of Tylenol, the active ingredient of which is Acetaminophen. This ingredient has been shown to increase the production of ROS upon being metabolized. We hypothesized that regular dosage with the recommended amount of Acetaminophen over a period of time would lead to decreased enzyme activity and beginning signs of liver damage. At the end of the injection period, the mice were humanely euthanized and their livers were dissected out and subjected to enzyme activity testing with hydrogen peroxide. Statistical analysis of the results showed a significant decrease in catalase activity after regular exposure to Acetaminophen over two weeks. Our hope is that this study will contribute to the body of research concerning the regular use of Acetaminophen.

Presenter: William Speer

Affiliation: Salt Lake Community College

Presentation Title: A restriction site (in silico) reevaluation of a chloroplast gene phylogeny for a common fern group: Restriction site data can still provide new insights

Abstract: Although most molecular phylogenetic studies utilize nucleotide sequence data, other data sources still remain as important sources for the inference of evolutionary relationships. Several previous studies have evaluated phylogenetic relationships within the genus *Pteridium*, or bracken fern, using chloroplast *rps4* gene and the *rps4-trnS* spacer sequence data. This study compares both sequence data previously submitted to Genbank with restriction site data (maps) generated in silico for *rps4* and the *rps4-trnS* spacer. Phylogenetic analyses used *Paesia scaberula* as the outgroup taxon. Results of the restriction site analysis were mostly very similar to the DNA nucleotide results, though there were some differences.

One of these is that the restriction site analysis suggested that *Pteridium aquilinum* subsp. *wightianum* (eastern Asia) has a much closer relationship with subspecies *pubescens* (western North America) and *decompositum* (Hawaii) than is suggested by the nucleotide sequence data. The restriction site data also joined the African *P. aquilinum* subspecies *capense* and *centrali-africanum* with North American, Hawaiian, and Asian representatives of *P. aquilinum*, but not with the European *P. aquilinum* subsp. *aquilinum*. Because this finding differs from previous phylogenetic analyses, it was very strongly evaluated in this study. Also examined in the nucleotide sequence data were indels found in the *rps4-trnS* spacer of *Paesia*, some of which corresponded to those previously reported for *Pteridium esculentum*, while another clearly distinguished *Paesia* from all *Pteridium* taxa. In addition to the phylogenetic analyses, the restriction site data generated for the *Paesia* and *Pteridium* specimens were further analyzed using principal components analysis (PCA) and non-metric multidimensional scaling (NMDS) ordination approaches. In the PCA and NMDS, *Paesia* was clearly distinguished from all *Pteridium* specimens. Three distinct *Pteridium* groupings were obtained in both ordination analyses: 1) *P. esculentum*/*P. arachnoideum*, 2) *P. aquilinum* subsp. *aquilinum*, and 3) all other *P. aquilinum* subspecies (with two distinct subgroups).

Presenter: Emily Irwin

Other Authors: Brayden Mollner, Sara Flood

Affiliation: Utah Valley University

Presentation Title: Does the distribution of private dentists in Utah, USA match population need? A high resolution GIS analysis.

Abstract: Objective: The distribution of dentists in the United States is very uneven, and is determined by not only major population centers, but also by the distribution of different race groups and poverty levels. This study examined the interaction of dentist location and population demographics in Utah, by applying high resolution Geographic Information Systems (GIS) tools to test the hypothesis that dentists are distributed relative to high population density and wealth. Method: Population data were obtained from the US Census Bureau (2010). The physical address for each dentist in Utah was collected and GIS tools were used to compare population demographics (census tract data) and dentist location. Result: The population of Utah was distributed across 588 census tracts. Of these tracts, 307 (52%) had at least one dentist. Of the most disadvantaged group, 45% had no dentist in their tract, while 32% of the more advantaged group had no dentist. A third of Native American Indians and Alaskans lived in tracts at least 20km away from a dentist; however the number for African Americans and Asians was 2%. Conclusion: It was found that dentists were unevenly distributed across Utah, with about half of census tracts having no dentist located within them. The more advantaged group of residents were more likely to be closer to a dentist. The number of Native American Indians and Alaskan people who lived at least 20km from a dentist was over 20 times greater than that of African Americans and Asians.

Presenter: Gabriel McKay

Other Authors: Michele Culumber and Craig Oberg

Affiliation: Weber State University

Presentation Title: Microbial Analysis of Art Byproduct Waste Streams

Abstract: Oil and acrylic art painting generates waste products related to solvents and paints used in the creative process. The initial phase of this research was aimed at finding and characterizing microorganisms from these art byproduct waste-streams. The goal is to find microorganisms that could possibly speed up the process of biodegrading these materials, which are often resistant to breakdown. Samples were taken from the art waste collection cans in the art studios including what appeared to be biofilms on the storage containers, as well as sludge samples and individual solvents. Minimal media containing three separate solvents was inoculated with samples from the waste stream containers and incubated on a shaker for up to 4 weeks. Biofilms formed in some of the containers during prolonged incubation. Nine individual bacterial cultures were isolated, including 4 Gram-positive rods, and Gram-negative rods and cocci. Taxonomic analysis of isolates shows a variety of bacterial species involved in degradation. Individual bacterial isolates have been incubated with varying concentrations of specific art solvents to determine their biodegradation capacity. We have found, isolated and tested microorganisms that have the potential to biodegrade art waste while it is in the collection and storage containers.

Presenters: Aaron Lavigne, Sam Smith, Craig Oberg, Isaac Bowen, and Don McMahon

Other Authors: Aaron Lavigne, Craig Oberg, Isaac Bowen, and Don McMahon

Affiliation: Weber State University

Presentation Title: Inhibition of *Lactobacillus wasatchensis* by bio-protective lactic acid bacteria cultures

Abstract: The nonstarter lactic acid bacteria (NSLAB) *Lactobacillus wasatchensis* can cause late gassy defect when it grows to high numbers during Cheddar cheese storage. A potential strategy for preventing such growth is incorporation of specific lactic acid bacteria strains (termed bio-protective LAB) into the cheese during manufacture, which may specifically inhibit growth of *Lb. wasatchensis*. Determination of inhibition by common NSLAB lactobacilli and potential bio-protective LAB (BPLAB) strains against *Lb. wasatchensis* was done using the spot test along with the agar flip method. MRS agar supplemented with 1.5% ribose (MRS-R) was inoculated with each NSLAB or bio-protective LAB using the spread plate method and incubated anaerobically at 25°C for 48 or 72 h. Inoculated agar was then flipped over and either *Lb. wasatchensis* WDC04 or CGL04 swabbed on the newly exposed surface with anaerobic incubation at 25°C for up to 72 h. None of the BPLAB strains produced any more inhibition after 48 h than the general competitive inhibition caused by the NSLAB cultures *Lactobacillus brevis* or *Lactobacillus fermentum* LF7469. When incubation time was extended to 72 h prior to challenge, BPLAB P200 showed the largest inhibition zones for both *Lb. wasatchensis* WDC04 and CGL04. The next inhibitory BPLAB was LB-3 with the NSLAB, *Lb. fermentum* LF7469, also producing a large inhibition zone. To test for bacteriocin production by the BPLAB, a paper disc assay test was performed using cell free extracts. Results confirmed a number of BPLAB strains produced a bacteriocin, showing a very small zone of inhibition for *Lb. wasatchensis* around the paper disc. Examining the antagonism between bio-protective cultures and NSLABs for *Lb. wasatchensis* strains allows for selection of lactic acid bacteria strains that could inhibit this problematic bacterium during cheese ripening.

Presenter: Trevor Chamberlain

Other Authors: Olga Kopp

Affiliation: Utah Valley University

Presentation Title: Kava: An ethnobotanical monograph of *Piper methysticum*

Abstract: Historically found throughout most of the islands of the Pacific Ocean, *Piper methysticum* is a shrub cultivated for its rhizomes which are used in traditional drinks or allopathic treatments. More commonly known as kava, *P. methysticum* has made its way into western cultures, typically administered as an anxiolytic, but occasionally used recreationally. The prominent effects of kava are caused mainly by compounds known as kavalactones found in the rhizomes of the plant. Recent studies have gone into discovering the pharmacology of kavalactone derivations and have found possible uses in the treatment of neurological disorders. Additionally, the biological activity of *P. methysticum* is believed to occur in the limbic structures of the brain as well as the endocannabinoid system. Current clinical studies have focused on liver toxicity, carcinogenicity, chemoprevention, and applications as an antidepressant. While many of the applications of kava are positive, contraindications include kava dermatopathy and liver toxicity. Additionally, a lack of quality control and standardization of commercial products is believed to be a possible cause of hepatotoxicity, leading some to believe more controls should be in place. This commercialization has led to the use of kava extracted into alcohol or acetone in capsules and sold as a natural product. Furthermore, kava is consumed recreationally as a beverage, however, the ceremonial context is often removed in attempts to attain a "legal high." This research reviews *Piper methysticum* and its uses highlighting the importance of additional research on kava's activity and potential toxicity.

Presenter: Dr. Stephen L. Clark

Other Authors:

Affiliation: Weber State University

Presentation Title: Taxonomy of *Penstemon leonardii* and *Penstemon platyphyllus* (Scrophulariaceae)

Abstract: These two species are morphologically very similar and have been difficult to separate using a taxonomic key. Observations by this writer suggested they may not be separate species, but rather represent an altitudinal cline with *P. platyphyllus* growing tall and robust at lower elevations and *P. leonardii* much smaller at higher elevations. Research supports

the idea that these are good species and can be separated on morphological features. However, because they are sympatric through part of their range a lingering question remained: “what is keeping these two species reproductively isolated?” Cytological studies of meiotic chromosomes provided an answer in that *P. leonardii* is a diploid while *P. platyphyllus* is a tetraploid. This paper examines the similarities and differences between these two taxa and suggests that *P. platyphyllus* originated as a consequence of *P. leonardii* doubling its chromosome number.

Presenter: Michele D. Culumber

Other Authors: Taylor Oberg, Tyler Allen, Fatih Ortakci, Craig J. Oberg, and Donald J. McMahon

Affiliation: Weber State University

Presentation Title: Development of Assays to Study Inhibition of Pathogens by Lactic Acid Bacteria and their Hemolytic Ability

Abstract: Many have studied laboratory cultures of lactic acid bacteria (LABs), noting their potential to inhibit pathogens. One technique used for this type of study requires that both the LABs and pathogens grow on the same agar plate. These studies often utilized Mann Rogosa Sharp (MRS) medium that favors the growth of LABs. However, when our lab attempted to replicate these studies, the pathogens struggled to grow on MRS medium, even without challenge by the LABs. In fact, when grown on MRS medium, *Staphylococcus aureus* exhibited faint growth at best and lost its ability to produce its yellow pigment. Thus, one purpose of this study was to determine which media would promote growth of the LABs obtained from over-the-counter (OTC) probiotics and six pathogens. Testing indicated that sheep blood agar (SBA) could grow both LABs and the pathogens. Using SBA in this assay allowed us to determine that all eight LABs inhibited *Streptococcus pyogenes* but none of the LABs inhibited the other five pathogens. It was also noted that the LABs grown on SBA induced hemolysis after 48-72 hours of anaerobic incubation at 37 C. This differed from the findings of others who did not see any hemolysis, likely due to limiting incubation to 24 hours. Further research is needed to determine if hemolysis is due to a hemolysin that targets red blood cells or if hemolysis resulted from the accumulation of acids elicited from the LABs. Another assay using SBA determined that hemolysis by some of the LABs was enhanced if the LABs were grown near *Escherichia coli* or *Shigella sonnei*. While others have studied laboratory cultures of LABs, this study is unique in its use of SBA to characterize pathogen inhibition by LABs obtained from OTC probiotic products and to study LAB™ ability to hemolyze SBA.

Presenter: Robert L. Bossard

Affiliation: Bossard Consulting

Presentation Title: Population dynamics of bat fleas in Great Basin Desert Caves

Abstract: Cave ecosystems in the Great Basin Desert require conservation, especially with development such as wind farms. I model population dynamics of bat fleas, and discuss factors regulating them. Bat fleas are significant fauna in many caves.

Presenter: Rusty Crofts

Other Authors: Wyatt Powelson, Eric Lancaster and Karen Nakaoka

Affiliation: Weber State University

Presentation Title: Characterization of Lactic Acid Bacteria Isolated From Over the Counter Probiotic Products

Abstract: Many studies have characterized laboratory strains of lactic acid bacteria (LABs), noting their potential health promoting features which has encouraged their use as probiotics. However, it is known that some LABs have traits, such as antibiotic resistance, that may have a negative impact on one’s health. This study’s purpose was to characterize 8 strains of LABs, all gram positive bacilli, that were isolated from 8 probiotic products, purchased without a prescription in Utah stores. The LABs were tested using the disk diffusion assay in which all 8 LABs exhibited antibiotic resistance to vancomycin, oxacillin and bacitracin, while five were also resistant to cefoxitin and 3 were resistant to ciprofloxacin. The minimum inhibitory concentration of cefoxitin, oxacillin, and tetracycline toward the 8 LABs was determined using Etest strips. The results of the Etest and the disc diffusion assay were consistent when Mann Rogosa Sharp agar (MRS) was used

for both assays. This was in contrast to Etest results that differed from the disc diffusion test results when, following the manufacturer's directions, sheep blood agar (SBA) and a higher concentration of the LABs was used instead. Interestingly, as a consequence of using SBA, five of the LABs were noted to be hemolytic after 48-72 hours of anaerobic incubation at 37 C. This is surprising since hemolysis is an indication of the potential for pathogenicity, yet probiotic LABs are generally considered harmless. This study is one of few that characterized probiotic strains obtained from products readily available to the consumer, indicating the potential for adverse outcomes from the use of these probiotics.

Presenter: Brody Gibson

Other Authors: Cynthia Rudh, Christian Curneal, and Karen Nakaoka

Affiliation: Weber State University

Presentation Title: Development of Assays to Study Inhibition of Pathogens by Lactic Acid Bacteria and their Hemolytic Ability

Abstract: Many have studied laboratory cultures of lactic acid bacteria (LABs), noting their potential to inhibit pathogens. One technique used for this type of study requires that both the LABs and pathogens grow on the same agar plate. These studies often utilized Mann Rogosa Sharp (MRS) medium that favors the growth of LABs. However, when our lab attempted to replicate these studies, the pathogens struggled to grow on MRS medium, even without challenge by the LABs. In fact, when grown on MRS medium, *Staphylococcus aureus* exhibited faint growth at best and lost its ability to produce its yellow pigment. Thus, one purpose of this study was to determine which media would promote growth of the LABs obtained from over-the-counter (OTC) probiotics and six pathogens. Testing indicated that sheep blood agar (SBA) could grow both LABs and the pathogens. Using SBA in this assay allowed us to determine that all eight LABs inhibited *Streptococcus pyogenes* but none of the LABs inhibited the other five pathogens. It was also noted that the LABs grown on SBA induced hemolysis after 48-72 hours of anaerobic incubation at 37 C. This differed from the findings of others who did not see any hemolysis, likely due to limiting incubation to 24 hours. Further research is needed to determine if hemolysis is due to a hemolysin that targets red blood cells or if hemolysis resulted from the accumulation of acids elicited from the LABs. Another assay using SBA determined that hemolysis by some of the LABs was enhanced if the LABs were grown near *Escherichia coli* or *Shigella sonnei*. While others have studied laboratory cultures of LABs, this study is unique in its use of SBA to characterize pathogen inhibition by LABs obtained from OTC probiotic products and to study LABs ability to hemolyze SBA.

Presenter: Bryan Casselman

Affiliation: Salt Lake Community College

Presentation Title: A Survey of Religion: Its Development, Neurophysiology, and Current Impacts

Abstract: There are few concepts that are as universal, dividing, and controversial as religion. It is hard to think of another mechanism that is so proficient at both bringing people together, and tearing them apart. Part of its controversial nature derives from the stark contrast in what religious and nonreligious people believe is the origin of the practice. Explanations for the practice range on a fairly large spectrum. On one side, explanations of religious people revolve around belief in the sacred histories found in their texts, claiming their faith was directly inspired by acts of God, or multiple Gods. On the other side of this spectrum, many nonreligious individuals believe it to be a man made construction, some even going as far as to consider it a mental disorder. Within these two polarities are a myriad of voices, each having their own signature brand of mental gymnastics to resolve cognitive dissonance between faith and scientific discovery. Multidisciplinary research on religion, however, does not necessarily agree, nor contradict many of the most prevalent supporters and critics today. Instead science paints religion as a complex byproduct of evolutionary mechanisms, refined through time via cultural narratives, physiological phenomenon, exposure to other cultures, and innovations in technology. In this paper we will illuminate the historical and anthropological development of religion, examine its neurophysiological impact, and evaluate its psychological and sociological benefits to the individual, and its place in an increasingly secular society.

Presenter: Adriana Christensen

Other Authors: Donald Warner, Jesus Soto

Affiliation: Dixie State University

Presentation Title: Identification and Characterization of a New Bacillus Species

Abstract: A new Bacillus species isolated from human blood specimens was studied by phenotypic, chemotaxonomic, and genetic characterizations. This bacterium has phenotypic and chemotaxonomic characteristics similar with those of Bacillus licheniformis; however, 16S rRNA gene sequencing indicates the bacterium is a new species for which the name Bacillus surgens sp. nov. is proposed. This bacterium has adapted to exist in both the classic and L-form. Some antibiotics treat bacterial infections by affecting cell wall synthesis of the bacteria present, but this novel bacterium does not have a cell wall in the L-form configuration. This adaptation has potential physiological benefits to the bacterium including, but not limited to, resistance to various antibiotics.

Presenter: A.J. Edwards

Other Authors: Dr. Samuel A. Wells

Affiliation: Southern Utah University

Presentation Title: The Effects of Different Proportions of Acute Exposure of Ethinyl Estradiol on Giant Zebra Danios (Devario aequipinnatus)

Abstract: The presence and consequences of endocrine disrupting chemicals (EDCs) have been of great concern in the past decade and a half in freshwater, estuarine and marine environments. Detrimental effects of such chemicals have been shown in invertebrates, fishes, domestic animals, and humans. Accelerated growth rates, behavioral changes, hormonal interference, and altered mating behaviors have been documented in various species of fishes. We exposed Giant Zebra Danios (Devario awquippinnatus) to four levels of the endocrine disrupting chemical 17 alpha estradiol to see if any behavioral effects could be identified in a laboratory setting. Fish exposed to the highest rates tended to congregate at the surface and gulped air more frequently than fishes exposed to lower levels of the toxin. Mortality increased at higher rates and a LC50 value was calculated.

BUSINESS ORAL PRESENTATIONS

Presenters: David Benson

Other Authors: James Brau, Derek Phelps

Affiliation: Brigham Young University

Presentation Title: MDs or MBAs: Who is better at leading medical device companies?

Abstract: Individual Physicians have become an increasingly important source of new medical device innovation. For example, the defibrillator, the stent, the pacemaker, the artificial hip, and the fetal heart monitor were all invented by individual physicians. More broadly, between 2000 and 2010, 20% of all patents in medical device technologies were invented by physicians. This trend, in turn, has led many physicians to start new companies in order to develop and commercialize their inventions. Indeed, within the sub-segment of surgical device startups, 60% of the new startups had at least one founder who was a physician, and 22% were led by a physician CEO.

Despite this increased contribution by physician inventors, scholars have devoted relatively little attention to examining it. Moreover, the research that has examined the role of physician inventors has largely focused on “interim outcomes” such as patents generated, rather than the ultimate measures that entrepreneurs and policymakers care about--new product approvals and startup success. In this paper, we seek to answer a simple question: Are startups managed by physicians more successful than those run by more traditional managers (the MBAs in our title)? We measure success in two ways: (1) Getting a new device approved by the FDA and (2) whether the startup is able to go public or be acquired. To answer this question, we

examine all surgical device startups founded between 1985 and 2005 and then track their success through 2015. This paper is of interest to both academics and practitioners alike.

Presenter: Jerry A. Van Os

Affiliation: Westminster College

Presentation Title: Validating Prior Learning Assessment Utilizing a Competency-Based Model

Abstract: Prior learning assessment (PLA) describes an assessment process in which students can earn college credit for college-level learning acquired outside a formal college curriculum. With PLA, students can progress more quickly towards degree completion, often at lower cost. PLA can be combined with a competency-based education curriculum to develop a “hybrid” approach that provides alternative pathways to degree completion for a significant population of non-traditional and transfer students with prior learning experience. To overcome concerns of academic rigor and quality associated with PLA, a uniform assessment process that measures student learning outcomes against pre-determined criteria is critical. Direct assessment by full-time faculty of submitted artifacts that demonstrate mastery of associated competencies through prior learning experiences is an essential component of PLA. A process to validate prior learning through assessment with a competency-based model is described in this paper. To validate the PLA process for a competency-based approach, a pilot study utilizing 24 students were selected to participate in a prior learning process. Pilot results indicated that overall, rubrics were sufficiently rigorous to assess program competencies associated with individual competencies. However, some rubrics were not sufficiently rigorous to assess program competencies and the paper provides recommendations to PLA assessment rubrics.

Presenter: Conner Jaspersen

Other Author: Paige Gardiner

Affiliation: Utah Valley University

Presentation Title: Pay Per Click Geotargeting Advertising Campaign

Abstract: Conducting this project look at how to optimize costs on Pay Per Click (PPC) campaigns for local companies using the Facebook Business Manager. Specifically the research will:

- Fine-tune interest marketing on PPC ads to suit the target market
- Conduct A/B tests with advertisements to determine successful fit for the business
- Apply geotargeting techniques
- Write copy and create digital imagery for posts

The research will also be presented to business and marketing students.

With the new Digital Marketing Degree at UVU, many opportunities for students have opened. However, local marketing companies may not yet see the value that students offer holding this degree. Because Facebook algorithms are constantly changing, an empirical study is needed to learn and teach these new students. The research can also be used by many marketing professionals in small businesses who need an empirical case study to guide their decision making.

Qualitative and quantitative case-study research that can be measured through the Facebook Business Manager. The research will be limited to a small business restaurant in Orem Utah. Facebook ads with unique headlines, content, and calls-to-action will be created. High levels of reach and customer engagement for each ad will be analyzed in the collected data.

There are several expected outcomes for the project:

- An expectation of 45% increase in Facebook page likes for the company
- Raise brand awareness as indicated by post shares, likes, and created stories
- What suggestions regarding client-customer relations can be made for those going into consulting:
 - o Communication methods “ Meeting times, email contact, phone calls, reporting findings, main person of contact
 - o Client values, vision, and mission “ Essential pieces to understand the client or company

Presenter: Jim Brau

Other Authors: Jim Cicon, Shibo Bian

Affiliation: Brigham Young University

Presentation Title: Chinese Initial Public Offering Roadshows and Agreement Between Managers and Investors

Abstract: We study 782 initial public offering (IPO) roadshows for Chinese firms that went public between 2009-2012. Using transcripts of the roadshows, we employ Jieba, a Chinese Python word segmentation module, to conduct textual analysis. We do this because in the Chinese language, terms may compose both single words as well as multiword phrases. After segmenting the text using Jieba, we use the cosine similarity measure to compare investors' questions to management's answers. We define float rate as the number of shares issued divided by the number of shares subscribed and the turnover rate as the trading volume divided by the number of shares issued. Along with float rate and turnover rate, we examine how the agreement between investors and managers impacts IPO underpricing. Underpricing is defined as the percent change in the stock price between the IPO offering price and the first-day public closing price.

We believe our study is the first to conduct textual analysis on IPO roadshow transcripts, as well as the first to do so in the setting of China. Our results indicate that agreement in the roadshow between investors and managers decreases the float rate and increases turnover rate (as defined above). We also provide strong empirical evidence that when the agreement between investors and managers during the roadshow is high, underpricing is also high. We show this effect after controlling for variables that the extant literature demonstrates significantly impact underpricing. We conclude with all three measures that when agreement is high during the roadshow, demand is increased, as illustrated in all three dependent variables.

Presenter: Jill O. Jaspersen

Affiliation: Utah Valley University

Presentation Title White Collar Crime: Attitudes and Perceptions of Utah College Students

Abstract: Utah's Attorney General is heavily involved in prosecuting white collar crimes, and has a website dedicated to specific white collar crimes.

Along with the Attorney General, Utah agencies feel an obligation to supply information to the public, including students, the uneducated, the aged and any vulnerable population. One of the main protectors of these populations is the Utah Department of Commerce. The Department mission is to promote commerce and protect Utah consumers through fair commercial and professional practices. (State of Utah Department of Commerce, 2016).

Under the Utah Department of Commerce, there are three active divisions which include the Utah Division of Securities, the Utah Division of Consumer Protection, and the Utah Division of Real Estate.

The Buyer Beware List is maintained by the Division of Consumer Protection to protect consumers from individuals and businesses who have engaged in deceptive practices; supply consumers with pertinent information so as to aid them in their decision-making; and encourage the development of fair consumer sales practices. (Utah Department of Commerce, Division of Consumer Protection, 2016). In 2013, the Division of Securities released a list produced by the North American Securities Administrators Association (NASAA) which included the Top Investor Threats to investors and small businesses. (Utah Department of Commerce, Division of Securities, 2013).

The Division of Real Estate also has additional resources and public service videos. (Utah Department of Commerce, Division of Real Estate, 2016).

Depending on the crime, these five agencies and their websites will be helpful to first time consumers as well as seasoned investors. In order to further future policy about white collar crime, it is important to survey what the attitudes of future consumers are regarding white collar crime. This will aid in forming good policy and education.

Presenter: Jeremy Endicott

Other Authors: James C. Brau, Barrett Slade

Affiliation: Brigham Young University

Presentation Title: A Hedonic Pricing Analysis of the Utah Country Single-Family Residential Housing Market

Abstract: Homeowners and investors have differing views concerning where the residential housing market stands today. In this study, we examine the Utah County housing market using a sample of single-family residential transactions from recent quarters (data obtained from the Wasatch Front Regional Multiple Listing Service). To measure the strength of the Utah County residential market, we examine the selling price, transaction volume, and the number of days the house is on the market. We compare housing prices using two models: a naïve model that simply calculates the average sell price over a period and a hedonic pricing model that gives a detailed, holistic view of how homes are priced (Colwell and Dilmore [1999]). The hedonic model incorporates characteristics of homes not priced in the naïve model. Characteristics include total square feet above and below ground, age of house in years, garage space, total lot area, and many other factors (Guttery and Sirmans [1995]). When using a hedonic pricing model, we find evidence that home values are increasing at a rate different than what the naïve model indicates which may explain the disparity in homeowner and investor sentiment. Discrepancies of results from the two models are examined and compared and contrasted to Brau and Slade [2001] who conducted a similar study in 2001. This paper is of interest to both academics and practitioners alike.

Presenter: Jim Brau

Other Authors: Mary Harrast, Mary Harrast

Affiliation: Brigham Young University

Presentation Title: A Metastudy of Microfinance Academic Scholarship from 2004-2016

Abstract: A significant amount of progress has occurred in the discipline of microfinance since the analysis of Brau and Woller (2004). In practice, Muhammad Yunus earned the Nobel Peace prize in 2006 along with the microfinance institution Grameen Bank that he founded bringing international attention and validity for the process. Online funding platforms such as Kiva have introduced an entirely new dimension to funding microloans. In this study, we examine the academic microfinance literature since the Brau and Woller (2004) article. We analyze hundreds of articles and identify the progress, and challenges, encountered over the past nearly 15 years since the publication of that article. Key issues such as sustainability of microfunds, gender empowerment, poverty alleviation, funding mechanisms, adaptability to different countries and cultures, and the changing nature of microloans are all analyzed. We propose an agenda for future research in microfinance to advance both academic study as well as practitioner efficacy.

Presenter: Richard Parsons

Other Author: James Nguyen

Affiliation: Texas A&M University Texarkana

Presentation Title: The Relationship Between Traditional and Noninterest Income at Commercial Banks

Abstract: The relationship between net interest margin (NIM) and non-interest income (NII) at commercial banks has important implications for business strategy and regulatory policy. An additional fact motivating this study is that the literature continues to show conflicting results when analyzing the relationship between NIM and NII. This research will seek to resolve the conflicts in the literature by taking several important steps forward.

Improved Data -This research will have data for a full 5 years after the financial crisis of 2008 and cover the years from 1992-2013. The scope of data used in this study is massive with over 140,000 records covering 28 financially liberalized countries. The data set now uses international accounting standards which are claimed to improve the integrity of bank data

Improved Statistical Methods-While the use of GMM was a large step forward using dynamic GMM takes the model to the next level through recognizing the importance of lags as well as endogeneity concerns so common with these types of models. This is the first time that dynamic GMM has been used to solve the simultaneous NII and NIM equations.

Improved Model. - The latest research on important variables is included resulting in improved calculations and consideration of new variables. Only theoretical variables are used from a microeconomic modeling perspective, however since some additional variables discussed in the literature review have received strong empirical support these will be included in our robustness checks.

The model produces excellent statistical results, which support the hypothesized nature and depth of the debated relationship, allowing banks to set proper strategy and policy makers to align appropriate regulation.

Presenter: Jim Brau

Other Author: Troy Carpenter

Affiliation: Brigham Young University

Presentation Title: Equity Issuance of Health Care Firms after the 2007 Market Crash and the 2010 Affordable Care Act

Abstract: We provide an empirical analysis of 195 initial public offerings (IPOs) and 547 seasoned equity offerings (SEOs) of health care firms which issued between 2008 and October 2016. This period represents eight years after the US financial crisis of late 2007 and also includes all equity issuances since the passage of the Affordable Care Act of late 2010. We compare and contrast our results with those of Brau and Holloway (2009) who study health care equity issuances from 1970-2008. We find that global health care issues in both the IPO and SEO markets are significantly over-represented in both the post-crash (2008-2010) and post-ACA years (2011-2016) vis-à-vis the overall equity markets. Consistent with prior studies, we show the existence of first-day underpricing in both IPOs and SEOs, along with poor long-run abnormal stock returns. We estimate cross-sectional multivariate regression models to explain the underpricing and long-run returns.

Presenter: Jonathan Westover

Other Authors: Teresa Cardon, Norman Wright, Ronald Miller, Kathryn Hughes, Rebecca Garrido

Affiliation: Utah Valley University

Presentation Title: A Tsunami of Need: Autism Awareness in Hiring and the Workplace

Abstract: This project is an ongoing initiative that aims to find what, if any, programs and training are being used by companies to better employ individuals with autism spectrum disorder (ASD). Utah has the third highest incidence of Autism Spectrum Disorder (ASD) in the country (1 in 58), with Utah County having the highest rate in Utah (1 in 40). There is said to be a "tsunami" of adults leaving the educational system heading into higher education and the work force. Organizations in our community need to critically analyze how they are currently addressing ASD in the workplace and how they will include this unique population in the future. Individuals with ASD have many talents and skills they can bring to the work force (i.e., attention to detail, specialized focus in technology, programming, etc.), but thus far this group of individuals is grossly underemployed or unemployed. This project is an initial step in determining how to better support employers and employees who are looking to tap into the talents associated with ASD. There is minimal research on this topic and this line of inquiry will be beneficial to UVU, community partners, and business and autism communities nationwide. Furthermore, the community will benefit from this project in three strategic areas. First, we are exploring how companies can gain a competitive edge by incorporating individuals with ASD who bring a unique set of talents and skills into the workplace. Second, we are exploring what current health benefits exist to support families who may have children with ASD or employees who have ASD. Third, we are analyzing the legal issues or potential legal issues that can arise in the workplace with the American with Disabilities Act 504 Accommodation Plans. We hope to shine a light on these and other related issues to help

Presenter: Austin Nordblad

Other Authors: James C. Brau, Kohler Callis

Affiliation: Brigham Young University

Presentation Title: Just-In-Time Inventory Supply Chain Management in Small Manufacturing Firms

Abstract: Brau, Fawcett, and Morgan (2007) demonstrate that supply chain management (SCM) practices add value to small firms as manifested in asset utilization, revenue generation, and competitive performance. They rely on survey results from 570 US managers to draw these conclusions. We extend the work of Brau, et al. (2007) by examining a specific segment of SCM, namely, just-in-time (JIT) inventory controls in accordance with the work of Mitra, Sundaram, and PS (2012). Our data sample comes from the Standard and Poor's Compustat database and provides a rich laboratory with thousands of firms and audited financial data.

We begin our methods by providing summary statistics that go into great detail on the various segments of inventory control, such as raw goods, material in progress, and finished goods. We estimate regressions by four-digit SIC code to create industry-product-specific benchmarks for inventory levels and then compute the difference between the actual inventory held by small firms and the regression-based benchmark. We use the variance on inventory as an independent variable and test to see how it correlates with the same three dependent variables of Brau et al. (2007) as well as stock returns over various horizons. Our study contributes to the lean manufacturing academic literature (e.g., Nasab, Bioki, and Zare (2012)). Lean manufacturing is multi-dimensional and generally consists of management activities, just-in-time inventory management, supplier management, work teams, and quality systems. By focusing on just one of these segments of lean manufacturing, we are able to speak directly to the impact of realized JIT on a portfolio of performance measures.

Presenter: Ryan Stephenson

Other Authors: Colt Rothlisberger, Jon Westover

Affiliation: Utah Valley University

Presentation Title: Fostering Student Engagement through understanding and internalizing the mission statement and values of extra-curricular organizations

Abstract: Many organizations around the world have used mission statements to help instill core values in their employees and volunteers to help them become invested and engaged as they work for the organization. For many college students, getting involved in extracurricular activities contributes to their success in developing their skills and gaining necessary experience for being competitive in the job market or being admitted into graduate programs following graduation. Even though many students across campus currently get involved in these extra-curricular activities, preliminary evidence suggests that many students' current level of engagement is not sufficient to drive the overall success of their extra-curricular programs or their individual benefits following graduation, due to their values having an improper alignment with the values of the organization. This paper will analyze Utah Valley University's Center for the Advancement of Leadership's (CAL) 2-year leadership development program called, The LEAD Program. We will examine to what extent a CAL student's understanding and internalization of the CAL mission statement influences their long-term engagement in the LEAD program. We will also analyze whether or not each student is fit for the program by measuring how the students' values align with the organizations' values. We hypothesize that the students who better understand the purpose of CAL and the LEAD program for themselves personally and for the organization as a whole will be more engaged throughout their experience in the LEAD program. We also hypothesize that those students whose values are more fit for the organization will be more engaged and satisfied with their experience in the LEAD program. Online surveys will be administered to CAL students, with various questions exploring the relationship between LEAD students' engagement and their knowledge and internalization of the CAL mission statement and the influence of that internalization on the depth and breadth

Presenter: Jim Brau

Other Author: Troy Carpenter

Affiliation: Brigham Young University

Presentation Title: REIT SEO Underpricing and Prospectus Strategic Tone

Using a sample of 1,459 seasoned equity offerings (SEOS) by 223 real estate investment trusts (REITS) spanning from 1996 - 2015, we use content analysis to test whether the strategic tone of a company's offering prospectus (SEC Form S-1) has an effect on SEO underpricing. Using methods which are designed to sense either a negative or a positive strategic tone in the content of a document, we find that companies that use negative words in their S-1 filings negatively impact SEO underpricing. Surprisingly, in contrast to operating companies, REITS that use positive words do not have a commensurate positive effect on SEO underpricing.

Presenter: Jennifer Harrison

Other Authors: Dara Hoffa, Chelsea Dye

Affiliation: Westminster College

Presentation Title: Is Now the Time to Face the LIFO Issue?

The U.S. Financial Accounting Standards Board (FASB) and the International Accounting Standards Board (IASB) worked during the early years of the 21st century in an effort to converge their separate accounting rules into one comprehensive, globally-accepted set of accounting standards. Major issues were identified and some were addressed; resulting in several Accounting Standards Updates (ASU) for companies using U.S. generally accepted accounting standards (GAAP). Among the most recent and impactful changes were to Leases and to Revenue Recognition. These two ASUs are likely some of the last, if not the last, of the issues identified early in the FASB/IASB convergence plan that resulted in U.S. GAAP changes.

The flame of the FASB/IASB convergence has dimmed considerably. Currently, there is no convergence plan other than the continued improvement of financial statement information. Likewise, the Securities and Exchange Commission has backed down from recommendations that U.S. companies follow IASB standards.

Given the current FASB/IASB relationship, continued convergence between FASB and IASB will be internally-generated. From the perspective of the FASB, given the U.S. political environment (assuming business-friendly executive and legislative branches of the U.S. government), the next four years may be the most opportune period in which to make one additional, early-identified and yet unaddressed, accounting convergence issue.

Identified early within the convergence process was the problem of the Last-In, First-Out (LIFO) inventory costing method. The issue being that the IASB accounting standards do not allow LIFO but U.S. accounting standards do. To complicate the issue, U.S. companies that use LIFO for tax purposes, must use it for financial statement purposes.

We plan to review the current status of the use of LIFO within oil & gas companies, identifying any changes within recent years. Likewise, we plan to identify and review possible alternatives in bringing U.S. accounting standards closer to international standards.

Presenter: John Talmage Brown

Other Author: James C. Brau

Affiliation: Brigham Young University

Presentation Title: Budget Habits of College Students: An Empirical Analysis of Expectations and Realizations

Using three samples of over 800 college students from a large, private university, this study analyzes their spending expectations, realized habits, and dispersion between the two. First, we ask the students to project what they think their monthly budget will be throughout the semester. Next, we ask them to track their expenses for three months. Finally, we ask them to report their actual spending habits along with answering dozens of demographic and potential explanatory variables. We use

univariate and multivariate econometric methods to explain the factors that determine 1) their expectations of future income and spending, 2) their actual income and spending, and 3) the difference between the two.

We extend the work of Hayhoe, Leach, Turner, Bruin, and Lawrence (2000), Henry, Weber, and Yarbrough (2001), and Libby and Lindsay (2010). Hayhoe, et al. (2000) study spending habits of college students, but do so under the context of credit use. We study all spending, regardless if credit was used. Henry, et al. (2001) administer a 13-item questionnaire and provide univariate descriptive statistics pertaining to budgeting practices. Our survey instrument has over 50 items and we are able to estimate multivariate models due to our large sample size. Libby and Lindsay (2010) explicitly study the budgeting practices of firms, whereas we extend this analysis to individuals.

EDUCATION ORAL PRESENTATIONS

Presenter: Shireen Keyl

Affiliation: Utah State University

Presentation Title: Entering Research for Social Justice 101: A Critical and Experiential STEM Course for Latina/Latino Undergraduates

Abstract: Disparities between Hispanic and White undergraduates in terms of STEM education are glaring: according to a national longitudinal study tracking the completion rates in the STEM fields among incoming freshmen, 33.7% of White students remained in STEM fields, while only 17.8% of Hispanic students did so (Beginning Postsecondary Students Longitudinal Study, 2009). And, with the Hispanic population growing at an exponential rate (The Pew Research Center, 2014) and that minority students are the “vanguard of America’s new racial and ethnic diversity (Johnson et al., 2014), it is imperative our country meet the academic needs of our Hispanic students; it is also urgent we as critical educators in higher education STEM fields provide equitable opportunities for all students.

This presentation is based on a paper that introduces an innovative course piloted at an institution of higher education. This course, titled “Entering Research for Social Justice combines the teaching of the scientific method with a culturally responsive curriculum and the utilization of critical pedagogy that focuses on social justice within the sciences in a workshop setting. The justification for such a course is supported by a Vygotskian theoretical framework, which emphasizes that a learner’s cognition is embedded in their social and cultural worlds. If we as educators connect a student’s learning to their heritage language and culture, we provide for more empowered learning. Students who enrolled in this course identified as Latina/o, Hispanic, or Mexican-American and spoke Spanish. All students were required to apply for REUs (Research Experience for Undergraduates) and other national grants. Students were introduced to Latina/o STEM researchers on campus and were also required to apply for a research lab position. For the students who enrolled in our course, all of them received research grants and all of them found a research lab to work in the second semester.

Presenter: Mary Sowder

Affiliation: Utah Valley University

Presentation Title: Pushing Back: Meaningful Evidence of Teacher Quality

Abstract: TAs state and national scrutiny on teacher education has intensified, educator preparation programs (EPPs) are faced with the daunting task of providing evidence that their candidates are adequately prepared for effective classroom practice. Policy makers and accrediting agencies have started to rely heavily on linking teacher preparation programs to in-service teaching performance of their completers and then to K-12 student achievement in order to draw conclusions about the efficacy of EPPs. At the same time, some states and EPPs have chosen to use multiple and more nuanced measures for assessing program outcomes, including traditional observation instruments for classroom practices and professional dispositions, as well as standardized, performance-based measures of candidate learning, such as edTPA.

The edTPA, a nationally available performance assessment for teacher candidates developed at the Stanford Center for Assessment, Learning, and Equity (SCALE), has sparked some heated discourse among teacher educators and teacher candidates. The proposed presentation will attempt to reorient the discussion to look at the potential for the use of edTPA as a formative measure used for program improvement, as well as one measure for the summative assessment of teacher candidate proficiency. The use of a standardized performance assessment for these purposes will be the focus of discussion and consideration within the broader issue of accountability for educator preparation programs. The story of one program's shift to considering program revision based less on faculty perceptions and biases and more on the collection and analysis of results including those from edTPA, will generate a discussion of the challenges in using a standardized performance assessment when attempting transformative change.

Presenter: Emily Johnson

Other Author: James C. Brau

Affiliation: Brigham Young University

Presentation Title: An Empirical Analysis of the Determinants of College Student Major Choice

Abstract: The primary research objective of this study is to empirically examine what factors impact the decision of college students to choose the various majors of business. We examine the choice of: accounting, finance, supply chain management, marketing, entrepreneurship, organizational behavior/human resources, strategy, non-business STEM, and non-business non-STEM. Using a sample of 512 students at a large, private university, we collect dozens of demographic data points to serve as independent factors. We then conduct univariate and multivariate econometric tests with the choice of major as the dependent variable.

Our study extends the work of Al-Rfou (2013) who examines the impact of variables that proxy for personal background factors and future job factors, along with other demographic control variables and how they relate with the choice of business major. Al-Rfou (2013) shows that the strongest personal correlates of major choice are parents, siblings, and friends. For future job factors, she provides evidence that prestige, money, and job opportunity are the most significant factors.

We extend the work of Al-Rfou (2013) by using US students (as opposed to students from Jordan), by including a more-carefully constructed demographic control panel, and by including non-business majors. Our results provide a rich description of the factors that US students consider when choosing their majors and allows us to compare US and Jordanian students.

Sources Cited:

Al-Rfou, Ahmad Nahar. "Factors that influence the choice of business major evidence from Jordan." *Journal of Business and Management* 8.2 (2013): 104-8.

Presenter: Jonathan Westover

Affiliation: Utah Valley University

Presentation Title: Using Community-Engaged Experiential Learning Pedagogy to Engage Millennial Students

Abstract: While much has been said (often negatively) about the Millennial student and worker, research has shown that as a group they are high-achieving, have a strong desire for ongoing personal and professional development, and tend to be seriously invested in making a marked sustainable impact on society and in the communities in which they live and work. So how do we better engage our Millennial students? One avenue is through the use of community-engaged experiential learning (or service-learning) pedagogy in the classroom and projects in the community. While service-learning is not a new phenomenon, this "civically-engaged" experiential learning pedagogy has increased in popularity and usage in educational settings in recent years. Additionally, community-engaged experiential learning can be utilized to provide meaningful community service opportunities that simultaneously teach civic responsibility and encourage life-long civic engagement, while also providing opportunities for significant real-life, hands-on learning of important skills and vital social understanding for Millennial students. This research utilizes pre/post-test methodology to measure the skill development and attitudinal shifts in students engaging in community-based experiential learning projects, as well as in-depth qualitative analysis of end-of-semester student reflections and community partner surveys.

Presenter: Sue A. Womack

Affiliation: Utah Valley University

Presentation Title: Pre-service teachers' conceptions of differentiation in Mathematics lessons: theory and practice

Abstract: Transfer of learning into practice is difficult. We investigated preservice teachers' conceptions of differentiation of mathematics lessons, looking to see if 1. their conceptions of differentiation matched the theoretical model taught in class, 2. if their practice as student teachers transferred the theory into practice, and 3. if their practice as a student teacher differed from the practice they observed in their cooperating teachers practice.

Preservice teachers observed and categorized cooperating teachers' use of differentiated instruction in mathematics lessons during an engaged learning field experience. They subsequently described their own math lessons as student teachers.

Both quantitative and qualitative data were analyzed, giving a more complete picture of practice. The findings suggest that pre-service teachers have an emerging conception of differentiation, that they use a narrow range of strategies, but that they report differentiating more often than their cooperating teachers.

Presenter: Rebekah Inez Brau

Affiliation: Brigham Young University

Presentation Title: Instructional Designer Values as Revealed Through the Use of Inscriptions

Abstract: The literature regarding inscriptions is rich with discovery, to include the reasons why designers sketch (e.g., Oviatt, Miller, Hodge, & Mann, 2012; Tversky, Zacks, Lee, & Heiser, 2000; Wardak, 2016). However, there is little to no research regarding what sketching reveals about designers' values. Extant research has been done largely from an outside viewpoint. This outside view offers a fundamental definition of inscriptions, which is becoming more standardized in the academic education literature. Wardak (2016) introduces the term inscription as popular in the use of archeology and it is now just becoming common in instructional design. Inscriptions refer to any markings such as numbers, tables, diagrams, and charts; however, it is not limited to a specific form since inscriptions are used to capture abstract ideas (Oviatt, Miller, Hodge, & Mann, 2012; Wardak, 2016).

The literature on instructional designer values, however, is vague and requires a great deal of inference. For example, Wardak (2016) argues that inscriptions and visual materials created at any stage of a project may or may not contribute to later stages of design or further meetings. Two research questions that germinate from Wardak's (2016) work are: 1) Do designers place value on their initial brainstorming? and 2) Do designers discount their early processes and focus on the end design?

Studying instructional designer's values is significant because if research is going to help instructional designers, scholars need to understand the designers' thought processes. Research cannot understand designers from a distance, which is the manner they have previously been studied. To gain answers to the questions from the point-of-view of the instructional designers, I conduct a series of three semi-structured interviews with six instructional designers. I use Hermeneutic-Ethnography, which is similar to open-discussion interviews with a few leading questions.

ENGINEERING ORAL PRESENTATIONS

Presenter: Jacob W. Carter

Other Author: Dr. Ali Siahpush

Affiliation: Southern Utah University

Presentation Title: Simple Strength of Material Experiment to Evaluate the Deflection of a Beam

Abstract: In engineering applications, when different components such as beams, columns or foundations have been used, normally they are designed within the certain limits. Limits are placed on the amount of elastic beam deflection when it is subjected to a load. The design of such beams can be complex but is essentially intended to ensure that the beam can safely carry the required load. The purpose of this paper is to discuss the fundamentals of beam deflection and a simple and cost effective method (integration method) to evaluate the amount of deflection and slope at the free end of beams based on the load. To test these fundamentals a device was designed and built to evaluate the deflection in a beam. Upon successful completion of this exercise, participants will understand the concept of beam deflection and will be able to evaluate the deflection of a beam under different vertical loads. Our values obtained through experimentation and evaluated using beam theory match within 95% of the theoretical values.

Presenter: Casey Cooper

Other Authors: Jacob Carter, Justin Christensen

Affiliation: Southern Utah University

Presentation Title: A Fundamental Look at the Unique Properties of Copper

Abstract: Copper has been used for centuries as a tool, religious symbol, and token of societal hierarchy. The use of copper has been mentioned in some of the oldest civilization records, even as early as 9000 BC in the middle east. Copper was the prominent element to bring civilization from the Stone Age into the Bronze Age. The physical, chemical, electrical, and magnetic properties have solidified its integral place in today's society. Its abundance, low extraction cost, and versatility make it an excellent material for a variety of applications. The following general properties will be discussed throughout this paper to give an expanded understanding of copper: physical, chemical, electrical, magnetic, optical, economic, and environmental. Mechanical and electrical properties of copper were experimentally evaluated and compared to published values. Some of the more in-depth research areas include copper's resistivity, yield and tensile strength, modulus of elasticity, failure, annealing, and hardening. These areas have specific test data representing some of the distinguishing characteristics of copper, such as its ductility and electrical conductivity.

Presenter: Fon Brown, Ethan Albretson

Affiliation: Weber State University

Presentation Title: Encoding Data on Photographic Media using OFDM

Abstract: A spatial application of Orthogonal Frequency Division Multiplexing (OFDM) is explored that encodes and decodes digital data using photographic media. Photographic media typically lacks pixel density but provides superior color depth. Using grayscale images, the printing and scanning process was studied to characterize the transfer function of the overall transmission process. Data was then encoded into symbols with 8-PSK using 10 spatial frequencies in two dimensions. A cyclic border (the spatial equivalent to the cyclic prefix) was added to account for spatial transients. A means for synchronization and skew correction was embedded in the photograph to accurately identify the boundaries of each symbol. Images were rendered photographically, scanned back and decoded. The relationship between image size and bit error rate was then studied to determine the highest bit density that data can practically achieved using this approach. Preliminary results suggest that the bit density is comparable to QR code.

Presenter: T. McKay Stoker

Other Author: Dr. Nick Roberts

Affiliation: Utah State University

Presentation Title: Effect of Different Potential Combinations on Characteristics of Nanoparticles formed by Dewetting

Abstract: The interaction energy between a substrate and a film has great effect on the size and distribution of nanoparticles formed through dewetting (the contraction of a thin film into tiny droplets on a substrate). When the film is capped with another material, the interaction between the film and the cap also affects size and distribution. To study these effects, a system with a silica (SiO₂) substrate and a thin film of gold (Au) is modeled in the Large-scale Atomic/Molecular Massively Parallel Simulator (LAMMPS). The interaction energy between substrate and film is changed between a chosen low, medium, and high value. A simulation is run with each of the three values where the gold is set to a high temperature (1400 K) and allowed to dewet. Pictures are extracted during each simulation and are used to determine nanoparticle size and distribution. An alumina capping layer is added to the system and simulations are run with all combinations of substrate and cap interaction energies (both alumina and silica have the low interaction with gold; alumina has the medium interaction energy, silica has the low interaction energy; both alumina and silica have the medium interaction energy; etcetera). These simulations also produce pictures for size and distribution analysis. In total 12 simulations are run and analyzed to study the effects of cap and substrate interactions on the characteristics of the gold nanoparticles formed.

Presenter: Gene Ware, Brian Simons, Doran Baker

Affiliation: Utah State University

Presentation Title: Mesospheric Altitude Profile Anomalies Observed by SABER Space Instrument

Abstract: The Earth has a natural airglow layer centered at about an 87-kilometer altitude. This airglow is the major source of natural brightness on a dark night. This emission layer is attributed to hydroxyl gas formed from the hydration of ozone. The typical layer shape is expected to be approximately Gaussian with a thickness of about seven kilometers; however, about thirty percent of the scan measurements observed from an artificial satellite have exhibited anomalous profiles. Multiple peaks and extended thickness are sometimes seen. This paper explores the likely causes of these anomalies.

HUMANITIES ORAL PRESENTATIONS

Presenter: Thomas C. Terry, Ph.D.

Affiliation: Utah State University

Presentation Title: Schwarze Vogelmenschen: The Tuskegee Airmen and Charles Sumner Stone, Jr. through an Interpretive Biography Paradigm

Abstract: Time and selective national memory have burnished the culture surrounding World War II's "Greatest Generation," obscuring a brutal fact. While their manpower was essential to the war effort, African Americans were deeply conflicted and angry that the U.S. needed them overseas but denied them equality at home. The most visible examples of African American commitment to the war were the Tuskegee Airmen, legends for fighting the air war over Europe. But many Tuskegee Airmen were draftees and had no burning passion to fight and die for a racist country. Charles Stone was one of those African Americans draftees, transplanted abruptly from Connecticut to a far different world in Alabama. Sixty years later in an interview with the author he recalled, "I didn't feel any great patriotic fervor." Samuel Johnson said, "Patriotism is the last refuge of scoundrels." And I didn't want to be a scoundrel." He was delighted when the military shuttled him from training regime to training regime rather than into combat.

The purpose of this study is to examine the struggles and consequences of the Tuskegee Airmen's experiences freed of nostalgia through Stone's career as exemplar. This study employs an interpretive biography framework differing from tra-

ditional approaches by “create(ing) literary, narrative accounts, and representations of lived experiences.” The biographer is an integral rather than aloof component of the process, according to Norman Denzin, its principal exponent along with Jean Paul Sartre.

After the war, Stone broke numerous color barriers as the first African American member of the White House press corps and of white Philadelphia newspapers. His career included two Pulitzer Prize nominations, the Congressional Gold Medal, the editorship of three prominent black newspapers, and prestigious professorships at two major universities. Stone was a Congressional aide and involved with the Civil Rights and Black Power movements.

Presenter: Brian J. Simons & Doran Baker

Affiliation: Utah State University

Presentation Title: Laying Duck Eggs: The Americanization of Scandinavian Immigrants in Utah

Abstract: During the second half of the nineteenth century, 30,000 Latter Day Saint (LDS) converts poured into Utah from Denmark, Sweden, Norway, and Iceland. Foreign converts to the LDS religion joined with the intent of emigrating to join church members in the United States. As the future emigrants joined the LDS faith by the thousands, they were pressed early on by LDS leaders to transition to Anglo-American LDS culture and tradition. This process was more difficult for foreign converts from outside the British Isles. Scandinavian immigrants elsewhere in America assimilated through a gradual, organic process, spanning several generations. In contrast, the Americanization of Scandinavians in Utah was rapid and severe, happening largely within the first generation, as the religion influenced all aspects of life, including gender roles, language acquisition, religious tradition, farming practices, and political gatherings. This essay discusses both the reasons behind the rapid assimilation of Scandinavian immigrants, and the process itself.

Presenter: Tiffany Kinney

Affiliation: University of Utah

Presentation Title: Cracking the Stained Glass Ceiling: Emmeline B. Wells and her Strategic Arrangement Patterns

Abstract: The intersection of faith and feminism is of interest to many rhetorical historians as female rhetors from these intellectual and religious heritages are frequently the subject of recent scholarship. These celebrated religious feminist voices span from 300 B.C. with Timycha, a woman involved in the sacred enclave of the Pythagoreans (Pomeroy 2013), to women currently preaching in Protestantism (Mountford 2003).

The women of The Church of Jesus Christ of Latter Day Saints, or the Mormons exemplify, one important, but often neglected, site of female rhetorical power. Emmeline B. Wells (1828-1921) is of particular interest as a feminist rhetorician because of her revered memory as an authority in this community. For example, she was the longest running editor of the *Exponent*, as she edited this periodical for thirty-nine consecutive years and produced over five hundred editions. But not only was she a prolific writer, she was also exceedingly persuasive, as she forged a position of legitimacy for Mormon women through her writings.

This presentation relays the results of my analysis of Wells’ writing in *The Women’s Exponent*, specifically examining her strategic and deliberate use of arrangement patterns. In her arrangement, Wells effectively “sandwiches” official church discourse, penned by the all-male Mormon leadership, in-between feminist discourse written by herself and national suffragists. Historically, this exposure from the practice of “sandwiching” is one step towards cultivating a greater position of legitimacy for Mormon women because its prominence gathers attention of a readership, who can effectively work for and support women’s authority in this religious context.

Ultimately, in this presentation and through my research I create a fuller account of feminism within the religious context of Mormonism through the life of one Mormon feminist.

Presenter: Douglas C. Jensen

Affiliation: Utah Valley University

Presentation Title: Stopping the Bleeding: Guatemala's National Anthem '¡Guatemala feliz!'

Abstract: The original lyrics of the National Anthem of Guatemala (made official in 1897), by the Cuban exile (and Honduran citizen, later nationalized Guatemalan), José Joaquín Palma, is full of the usual tropes present in most of the hymns of the American republics: slavery, tyranny, the constant threat of imperialist forces, and the great nobility of the people and its infinite desire to serve and defend the country.

It is also a bloody hymn, since in the 12 stanzas (including "choruses"), seven of them present images of blood or use the word blood or bloody in some form. Another stanza makes mention of the stain on the flag, which certainly represents a reference to blood as well.

Later, in light of sensitivities distanced from the reality of the struggle for Central American independence, in 1934 Professor José María Bonilla Ruano was asked to reform the lyrics to better reflect "harmony with our pacifist spirit."

The revision by Bonilla Ruano brings a new perspective on the end of the hymn, which alludes to the images of the two symbols of the country, the flag and the quetzal. In addition to correcting the confusing description of the flag in the Palma version, Bonilla deftly brings the two symbols to the foreground by removing the abundant and inaccurate references to bloody violence, which are in fact practically nonexistent in the country's struggle for independence from Spain.

The present work considers the function of the anthem as a tool for simultaneous evaluation of both the historical past and the idealized future of Guatemala, as envisioned both before and after the Bonilla Ruano revisions.

Presenter: Melvin A. Davila Martinez

Affiliation: Utah Valley University

Presentation Title: Dissolving Harrop's Semantic Paradox Concerning Moral Error Theory

Abstract: Moral error theory is the anti-realist meta-ethical position that all moral predications of objective value are false, for their truth-conditions fail to be satisfied by any truthmakers, since those truthmakers, i.e., objective value-entities or objective value-properties, do not exist.

Hence, if P is a moral predication of objective value, e.g., X is [objectively] good, X is [objectively] wrong, or X is [objectively] permissible, etc., moral error theory holds that P is false, making $\sim P$ true.

Some, such as Harrop (2016), charge that moral error theory, as initially formulated by J.L. Mackie, is self-contradictory, in the sense of it being logically inconsistent, for affirming Mackie's position permits the derivation of a semantic paradox; Harrop's charge supposes that at least one negation $\sim P$ of at least one moral predication of objective value P is either itself a moral predication of objective value or entails a moral predication of objective value, thus permitting a proof in which both P and $\sim P$ are taken to be true. Harrop's argument hinges on a particular translation of $\sim P$.

In this paper I argue that while at least one translation of $\sim P$ may prima facie appear to be a moral predication of objective value, this is so only as a result of conversational implicature. Indeed, no translation of $\sim P$ is, strictly speaking, either itself a moral predication of objective value or entails a moral predication of objective value, and therefore Harrop's semantic paradox concerning moral error theory cannot be produced once this second-order position is embraced along with the following restriction to moral error theory: that it only applies to first-order positive atomic moral predications, rather than that it extends to the sort of negative existential predications Harrop relies upon.

Harrop, Stephen. Semantic Paradox Concerning Error Theory. *Aporia* 26, no. 1 (2016): 13-26.

Presenter: Jim Brau & Hannah Brau

Affiliation: Brigham Young University

Presentation Title: The Ethicality of the Corporate Goal to Maximize Shareholder Wealth

Abstract: In an article that analyzes the ethicality of the shareholder wealth maximization (SWM) goal of the firm, Brau (2017) argues that under certain conditions, SWM is indeed ethical. Discussing SWM in the context of the ethics camps of deontology, utilitarianism, virtue ethics, and justice theory, she sets forth necessary and sufficient conditions for ethicality of the goal to maximize shareholder wealth. In contrast, Jones and Felps (2013) provide a utilitarian critique of the ethics of SWM and claim that it is not an appropriate goal of the firm because it does not optimally improve the social good. Hawley (1991) goes as far as to claim: "Overemphasis on the SWM objective by some companies can lead to dangerous or disastrous consequences for consumers, employees, or the general population." In this article, we defend SWM by providing a utilitarian critique of the Jones and Felps (2013) and the Hawley (1991) articles. In contrast to Jones and Felps (2013), we use the platform of utilitarianism to argue that the SWM goal, in the proper setting, approximates optimality of social good more than any alternative goal. As part of our critique, we discuss the limitations of stakeholder theory (a leading alternative to SWM) and show why SWM is superior for promoting social and economic good.

Presenter: Audrey N. Saxton

Affiliation: Brigham Young University

Presentation Title: Sex and Politics: Gendered Power Structures in the Medieval Romance Tradition

Abstract: In the Medieval Romance tradition, there are many poems that link the physical male body with established power systems. This link can be seen in poems such as "Havelok the Dane," "Sir Isumbras," and "Le Mort Darthur." However, this ridged relationship between body and politics only allows for narrow definitions of gender, power, and justice. If bodies try to deviate from these established definitions, violence is used to correct them and reestablish them firmly within the system. Additionally, in order for women to participate in this structure, they must violently alter their physical bodies to be more closely aligned with the male body. However, there are other poems in the Romance genre, such as "Sir Lanval," "The Wife of Bath's Tale," and "Sir Gawain and the Green Knight," which explore alternatives to this ridged structure through their depiction of female bodies. These hypersexualized and often bare bodies provide an antithesis to male-dominated power structures; in place of violence, the female embodied system allows for choice, ambiguity, and fluidity when faced with questions of power and justice. Through this survey of Romantic poetry, readers can see the tensions between the social institutions of the male-dominated society and the imagined female alternatives. The role that the physical body plays in systems of power and justice is not only important for understanding medieval societies, but can also help contemporary audiences recognize the importance of the physical body in policy making and justice systems.

Presenter: Ana M. Aguilera

Affiliation: Utah Valley University

Presentation Title: Politics in Children's Literature: The Case of Spanish Novelist Belén Gopegui

Abstract: The idea of civic compromise has always been present in Belén Gopegui's novels. She has defined her novels as experiments in which she presents values and behaviors radically opposed to those hegemonic in contemporary literature. From Gopegui's perspective, most of contemporary literature focuses on personal problematics and, by doing so, it promotes among its readers political apathy as well as models of subjectivity characterized by individualism and fragmentation, making this literature an instrument for ideological hegemony by financial elites.

Gopegui's oeuvre aims to return politics into people's lives by promoting the public dimension instead of the private and personal and, with that, she collaborates to create a new left-leaning vision of society and subjectivity. Her main goal is to promote a political project that aims for a radical form of democracy and a form of capitalism tamed by political intervention.

We will present how those literary and political projects appear in her books addressed to children: *El dia que mama perdio la paciencia* (2009, *The Day that Mom Lost Her Patience*) on gender relations; *El amigo que surgio de un viejo ordenador* (2012, *The Friend Who Came Out from an Old Computer*) on unemployment, political activism and social media; and *El balonazo* (2013, *The Ball*), focused on illegal immigration. Participants will become familiar with a model of left-leaning children's literature for the 21st century.

Presenter: Jorge Nitguritzer

Affiliation: Utah Valley University

Presentation Title: English Only vs Bilingual Education: The Path to Good Health

Abstract: When we talk about the personal progress we achieve when we speak more than one language, we generally think of the economic benefits that await us in the future. However, being bilingual has another side that is not often discussed but is just as important: the path to good health.

In this paper we will discuss how our health can benefit from learning another language. In addition, we will analyze how and why the state of Utah has become a pioneer in the United States in dual language immersion programs.

An article entitled "Why bilinguals are smarter" published by *The New York Times* in March of 2012 shows the benefit of learning a second language. The author, Yudhijit Bhattacharjee is an award-winning writer whose essays on science and medicine have appeared in prestigious newspapers and magazines such as *The New York Times* and *National Geographic* among others.

"Speaking two languages rather than just one has obvious practical benefits in an increasingly globalized world. But in recent years, scientists have begun to show that the advantages of bilingualism are even more fundamental than being able to converse with a wider range of people. Being bilingual, it turns out, makes you smarter. It can have a profound effect on your brain, improving cognitive skills not related to language and even shielding against dementia in old age" (Bhattacharjee).

Presenter: Spencer C. Woolley

Affiliation: University of Utah

Presentation Title: Out from the Trees: Crusader Rustics in The Book of Contemplation

Abstract: To paraphrase von Clausewitz, history is the continuation of philosophy by other means. One such confluence of thought and action occurred when the feudal denizens of the European peninsula decided that the end of the eleventh century would be an excellent time to undertake an armed pilgrimage to the Holy Sepulcher. If they met resistance on the way, well then, they wore chain mail and carried swords for that very purpose. They did encounter Byzantines and Turks, and a convenient, if not providential political vacuum that allowed them, after bloody deeds to assume suzerainty over a narrow strip of the Levant. Thus commenced almost two centuries of Crusader presence in the Middle East, a presence abhorred, then tolerated, then repulsed by the Islamic residents of the area. One such resident was the warrior-poet-scholar Usama ibn Munqidh, who composed the *Kitab al-tibar*, the *Book of Contemplation*. Usama dwelt in the middle of the twelfth century, when Crusader military power and Frankish political rule stood at its apex. Usama provides many reasons for his ill will towards the Crusaders - their false religion, their persecution of Muslims, their unwanted and misguided rule of spaces that he regards as belonging to him, and those emirs to whom he owes allegiance. This paper examines a different paradigm in Usama's critique of the Crusaders: their lack of urbanity. Of the many justifications for loathing the invaders of his homeland, Usama reserves his deepest ire for their lack of urban graces, their inability to function in civilized society, and their different view of honor; the Crusaders' rustic roots provide a unique weakness for him to censure, and to justify greater Islamic action against them.

LANGUAGE AND LITERATURE ORAL PRESENTATIONS

Presenter: Elizabeth DeBetta

Affiliation: Utah Valley University

Presentation Title: Needing More Than “Room”: Virginia Woolf and the Equality of Difference

Abstract: In two of her best-known works, “A Room of One’s Own” and “Three Guineas,” early twentieth-century feminist Virginia Woolf details the plight of women of her era while also asserting potential roles enabling women’s social, political, and literary success. Woolf’s stylistic and rhetorical strategies align her with fourth-wave feminism in ways that afford her century-old argument continuing relevance to today’s creative, educated women. Through a conversation beginning in “A Room of One’s Own” and expanded in “Three Guineas,” Woolf advocates forward-thinking, visionary use of existing power structures to achieve what might be called an “equality of difference”—an equality that embraces, celebrates, and depends upon gendered differences.

Presenter: John Schwiebert

Affiliation: Weber State University

Presentation Title: Radical Innocence: Romanticism, Whitman, and the Transcendent Power of Love

Abstract: W.B. Yeats described a cognitive state beyond original innocence and critical awareness as “radical innocence,” in which adult awareness is sustained and even deepened while being at the same time transposed, from a minor to a major key, by love. It is within this transcendent condition of radical innocence that certain poets live. Using Walt Whitman as a case example, this paper demonstrates how radical innocence is concisely articulated in two particular poems: first, in the familiar “What is the grass?” section of “Song of Myself”; and second, in the 1855 autobiographical poem, “There was a child went forth.” These poems illustrate the process by which wordly experience and knowledge, both bitter and sweet, are transmuted into joy through the transformative power of love and can assist us in our own quests for life-affirmation in the face of doubt, difficulty, and negation.

Presenter: Holly Boud

Affiliation: Brigham Young University

Presentation Title: Fractal Theory and London Chaos in A Study in Scarlet as Keys to Understanding Holmes’s Genius

Abstract: In Sir Arthur Conan Doyle’s *A Study in Scarlet*, the world met for the first time the high-functioning sociopath and cultural icon, Sherlock Holmes. While fans have long questioned the source of his appeal and genius, thoughtfully considering such elements as his partnership with Watson or his manner of investigating crimes, no one has adequately assessed Holmes’s relationship with London. I assert that we cannot understand Holmes if we don’t understand London, and that it is Holmes’s ability to interpret the seemingly chaotic networks of nineteenth-century London that is the heart of his appeal. I apply the organizing principles of fractal theory to Holmes’s relationship with London, showing that he never acts randomly but strictly within a law of order as he reads patterns of creation and representation underlying apparent chaos, intuitively deciphering variations among repeated patterns to create order from disorder, systemization from chaos.

Presenter: Sean Jenkins

Affiliation: Weber State University

Presentation Title: Shiva Dances On’: Rediscovering the Novels of L. H. Myers

Abstract: Leopold Hamilton Myers (1881-1944) was son to a famous father: F. W. Myers, a classical scholar and founder of the (still extant) British Society of Psychical Research. Abandoning his father’s spiritualism in middle age, L. H. Myers found

his own voice as a poet and novelist of ideas. Three of his novels, initially published in the first quarter of the last century, have recently been republished together as *The Root and the Flower*. Based on the India of Akbar the Great, the novels are at the nexus of two competing interests: an anachronistic Victorian imperialism toward the India of the real world; and an India of the imagination, a place in which to stage a philosophical drama free of the binary of conqueror and conquered. Situated in a cauldron of competing religious claims, the novels rehearse arguments in a violence-free world for the best realization of the old dictum: know thyself. Myers examines the question of self-knowledge in context of another: what is the real? In an imaginary India, free of the risk of bloodshed, characters in the novels make competing claims for life's ultimate purpose. Some choose the sensualist path of the Vamachari, dissolving in the pleasures of the flesh; others argue for the self-renouncing path of the Buddha. Evoking comparison with the novels of Vardis Fisher, Myers examines life choices against a static political background, putting the choices themselves in stark relief against backdrops of enduring paradigms of ethics and beauty.

Presenter: Malori Crossley

Affiliation: Weber State University

Presentation Title: Shattered: How Loss and Grief Become Relational Terrorism in Mahajan's *The Association of Small Bombs*

Abstract: Karan Mahajan's 2016 novel, *The Association of Small Bombs*, explores the profound aftereffects of a small bomb blast on two families. Focusing on breakdowns in intimate relationships—where those who should be most intimate shut one another out from their shared grief—Mahajan considers how deliberate miscommunication turns grief and loss into weapons. I define deliberate miscommunication as the withholding of whole, true thoughts from an intimate other while fixating on a single (and often self-centered) aspect of an issue. A kind of emotional blackmail, withheld information is a source of power and leverage to the withholder and invariably leads to relational terrorism—which, in turn, is the leveraging of deliberate miscommunication to shame, blame, or pressure the intimate other into meeting the expectations or demands of the withholder. In Mahajan's novel, Vikas and Deepa Khurana ostensibly use deliberate miscommunication to work through the grief process—but in reality to assign blame to the other and thereby justify their own thoughts or actions. Using psychology theory explaining shame and couple violence, I will examine the origins, mechanisms, and consequences of the characters' relational terrorism.

Presenter: Todd Goddard

Affiliation: Utah Valley University

Presentation Title: *The Dickens Curse*; or, Charles Dickens' 1842 Visit to Cairo, Illinois

Charles Dickens' visit to Cairo, Illinois, in 1842 was both typical and unusual. Given its location at the juncture of America's two great rivers, it was typical for those traveling along the Ohio River to the western territories to pass Cairo. What makes Dickens' visit unusual is his caustic description of Cairo—arguably the most scathing in his *American Notes*. He would later fictionalize it as the dreadful "Eden" to which Martin Chuzzlewit is drawn from England to America in pursuit of a vaunted land deal. But what *American Notes* and *Martin Chuzzlewit* both seem to register is an acute anxiety over land and a foreboding sense of "placelessness." *American Notes* records a society in the midst of an industrial revolution—and thus one marked by transience, instability, circulation, and homogenization. In contrast to England, at least for Dickens, America was a land without roots. Indeed, *American Notes* critiques the unsettled and mobile dynamic that Michael Chevalier referred to in the 1830s as "the ever-moving sea of speculation" where all is in "circulation, motion, and boiling agitation." As with Chevalier, Dickens found that no "place" was sacred in America; no place was built to last; no place was free from the signs of the fleeting and the temporary and the flux and flows of capital tethered to America's "speculating spirit." And no locale exemplified these phenomena more than the unlikely Cairo, Illinois.

PHYSICAL SCIENCE ORAL PRESENTATIONS

Presenter: Michael Greenburg

Other Author: Steven Turley

Affiliation: Brigham Young University

Presentation Title: Optimization of Broadband Multilayer Mirrors via a Genetic Algorithm

Abstract: The utility of space observatories is limited by their range of collectible wavelengths; it is therefore ideal to maximize this range. I will report on the results of designing and optimizing multilayer mirrors for broadband reflectivity, especially in the vacuum ultraviolet. Due to the immense number of possible layer combinations and thicknesses for a multilayer mirror, I automated the mirror selection process. A genetic algorithm selects and mutates the best portion of a given population of objects which fit given design criteria to create a new population. Starting with a random population, the process is iterated as many times as desired, in the end yielding a high broadband reflectance mirror which is then optimized via gradient search. I found that placing a few layers under a very thin aluminum coating significantly increased EUV reflectivity, which would give access to important spectral lines such as that of the dominant He-II transition.

Presenter: Morgan Taylor

Other Author: Brandon Wiggins

Affiliation: Southern Utah University

Presentation Title: Smoothed Particle Hydrodynamics Simulations of Proto-Planetary Collisions in the Early Solar System

Abstract: The abundance of carbon and other volatile elements in Earth's mantle and biosphere is too unusual for self-development, due to the iron-rich core's affinity for these elements; we would expect to find carbon trapped within the core or else evaporated out of the atmosphere. This has motivated the hypothesis that Earth has accreted the volatile elements over its 4.4-billion-year lifetime. Recent studies discourage that the cause of this phenomenon came from meteorites and asteroids, as the ratio of silicon and carbon in these objects don't match up with the abundances of carbon and silicon within Earth's mantle. However, a collision with a mercury-like body, which had a silicon-sulfur rich core, may explain the paradox. While this idea promotes the possible cause of the carbon-rich mantle, no detailed hydrodynamic calculations exist. To successfully merge the planetesimals, the cores must unite as well as the mantles. In this paper, we use a parallel smoothed particle hydrodynamics code to analyze impact parameter vs. collision speed to better understand what conditions were necessary to produce the resulting volatile elements in the mantle.

Presenter: Spencer Thevenin

Other Author: Steve Turley

Affiliation: Brigham Young University

Presentation Title: Effects of Roughness on Reflection of Monochromatic Light

Abstract: If the scale of the surface roughness is on the order of the wavelength of incident light, traditional optics methods like ray tracing and physical optics fail to adequately model reflectance. In this project, boundary integral techniques were chosen because they provide direct solutions only limited by computer memory. Discretizing Maxwell's equations across a surface yields an $Ax=b$ matrix equation relating the surface current to electric field over a net of points. Reflectance calculations for transverse-magnetic (TM) waves on a perfect conductor in two dimensions are analyzed in depth to model the effects of scattering from surface roughness. Surface roughness more than a hundredth of the wavelength of the incident beam are noticeable and anything larger than a tenth the wavelength dominates the reflectance calculation. The effects of spatial frequencies are also analyzed. These calculations allow for comparison with previous approaches -- such as the scalar correction factors of Debye-Waller -- at various spatial frequencies.

Presenter: Brandon Wiggins

Other Authors: Jan Staff, Wesley Even

Affiliation: Southern Utah University

Presentation Title: Smoothed Particle Hydrodynamics Modeling of Double White Dwarf Mergers

Abstract: R Coronae Borealis stars are yellow supergiant variable stars with a hydrogen deficient spectrum. A proposed means of producing R Coronae Borealis stars is the merger of two white dwarfs with minimal dredge-up of O16 from the accreting star because observations of these stars put the O16 to O18 ratio close to unity. In this paper, we summarize our recent efforts to model the merging of a series of white dwarf pairs with a small variety of mass ratios and helium/oxygen abundances with a parallel smoothed particle hydrodynamics code SNSPH. We present comparisons to similar calculations carried out in Eulerian codes, finding that SPH predicts much less mixing between accretor and donor particularly if the accretor possesses a small layer of He on top of CO white dwarf.

Presenter: Myla R. Pereira

Other Authors: Rebecca L. Maedgen, Nathan S. Werner

Affiliation: Southern Utah University

Presentation Title: Evaluation of the Stereochemical Selectivity of the Nucleophilic Addition Reaction of the Mentylmagnesium Chloride Grignard Reagent with Phenylisocyanate

Abstract: Menthol is a natural product isolated from mint leaves and is the active ingredient found in cough drops. It is a six-membered carbon ring that contains three substituents: an alcohol, isopropyl, and methyl group. Six-membered rings exist primarily as an equilibrium mixture of two chair conformations that minimize angle and torsional strain. These conformations for menthol are not degenerate and thus can affect the reactivity of the functional groups contained on the ring. The focus of this research project is the evaluation of the stereochemical selectivity that results from a nucleophilic, and stereochemically labile carbon-magnesium bond contained on a menthol-derived six-membered ring. For example, the reaction of ($\hat{A}\pm$)-mentylmagnesium chloride and phenylisocyanate at 0 \hat{A} °C produces the addition product in 69% yield. No isomeric products are observed by analysis of the crude reaction mixture by gas chromatography coupled mass spectrometry. Coupling constant analysis of the product suggest that the ($\hat{A}\pm$)-(1R,2S,5R) diastereomer is the major product of the reaction. The potential applications of this research could be in the production of chiral menthol-derived catalysts for the production of new enantioenriched medicines.

Presenter: Stephanie Thomas

Affiliation: Brigham Young University

Presentation Title: Preventing Oxidation in Aluminum for EUV-reflectance with Cadmium and Zinc

Abstract: Pure aluminum mirrors optimize the reflectance of broadband mirrors for space-based telescopes; however, they oxidize instantly in atmospheric conditions, decreasing reflectance in the far-UV from 90% to 20%. I apply the largely untried method of Removable Volatile Aluminum Protection (REVAP) by overcoating freshly deposited aluminum mirrors with a barrier layer of cadmium or zinc intended for removal in vacuum. I use ellipsometry and energy dispersive x-ray spectroscopy (EDS) periodically to observe how the barrier layers interact with the aluminum and how the composition of the mirrors changes with time. Preliminary EDS results show zinc has possibly prevented aluminum oxidation in samples. Cadmium and zinc exhibit low adhesion to aluminum, making REVAP with them unfavorable.

Presenter: Douglas Hutchinson

Affiliation: Southern Utah University

Presentation Title: Migration of Lipids in a Supported Lipid Bilayer

Abstract: Membranes and membrane proteins have a profound influence on life. These influences are important to consider in scientific fields such as biology and medicinal chemistry. However, these can be hard to study unless we can successfully isolate each of the membrane components. In our research, we are simulating lipid and membrane protein motion under a technique called electrophoretic/electroosmotic focusing (EEF) by use of a computer program in attempt to improve the

technique. EEF has been shown to separate lipids and proteins, but the behavior of these lipids and proteins is not well understood in all phases of the separation. Our computer simulation will allow us to model the behavior of neutral and charged lipids and proteins in all stages of the separation. Our simulation calculates the movement of charged lipids. We are currently able to simulate the motion of two different species of charged protein and lipids. By optimizing our simulation using experimental data, we hope to reduce lipid migration to a 1-dimensional simulation that will be time and cost effective. This will help to increase understanding of protein/lipid interactions and functions for many important purposes in the science fields.

Presenter: Megan Raines

Affiliation: Utah Valley University

Presentation Title: China's Environmental Resettlement: Controversy and Complexity

Abstract: In spite of being the fourth largest country in the world, population distribution is one of China's primary concerns. Regions that are too dry or mountainous to be suitable for farming, industry, or daily human activity comprise large portions of its landmass, so more inhabitable areas face overcrowding-- taxing water resources, and raising pollution to dangerous levels in most cities. The large Gobi desert has continued to expand, causing China to become increasingly conscientious about global warming and the need to mitigate its effects. Resettlement programs respond to environmental concerns, as well as the need to support rural villagers who live in poverty resulting from dwindling resources, but mandatory resettlement is controversial. Recently, journalists have given a voice to many who, after generations of work on family lands, or in established careers, feel they have been forced into abandoning life in their rural communities. While China should be lauded for increased attention to global warming, inefficiency and corruption still thwart environmental protection efforts, making human resettlement seem trivial compared to other measures that are neglected in the interest of industry. This paper will examine these, and conflicting reports, and explore the possibility that environmental resettlement places undue burden on minorities, without demanding change-- through increased censure and incentivizing-- from industries whose practices contribute more to warming trends and soil erosion than mountain and desert inhabitants.

Presenter: Heather Browning

Other Authors: Andrew Sandoval, Nick Allen, Meagan Parker

Affiliation: Weber State University

Presentation Title: Synthesis and Characterization of Lead- and Tin-based Solar Cells

Abstract: Due to growing concerns of the changing climate, focus has been placed on alternative energy sources including new forms of solar cell materials that are inexpensive and environmentally friendly. Perovskite-based solar materials are a promising replacement for traditional silicon-based cells and supply the important features that are demanded of the next generation of solar energy. In this presentation, we will discuss our efforts at Weber State University to make lead- and tin-based perovskite solar cell materials.

Presenter: Matthew Wilkinson

Other Authors: Justin Talbot, J.D. Herr, Sarah Floris, Ryan Steele

Affiliation: University of Utah

Presentation Title: Renewable Energy Insights through Hydrogen Sulfide Oxidation

Abstract: Renewable Energy Insights through Hydrogen Sulfide Oxidation Promising renewable energy sources are derived from the conversion of sunlight and water (H₂O) into chemical fuels, but robust catalysts to make this process efficient remain a scientific challenge. Known biological processes perform similar redox chemistry of hydrogen sulfide (H₂S), and the aim of this work is to investigate the mechanisms of H₂S oxidation for the purpose of providing new insight into solar fuel generation.

Computational chemistry simulations have been used to 1) predict the structural trends and thermodynamic driving forces of gas-phase H₂S clusters upon ionization, 2) determine the real-time molecular dynamics of these ionization processes, and 3) compute infrared absorption spectra of key species in order to verify these computational results and connect to experimental studies. The behavior of [H₂S]_n from n=1-21 clusters is very unique in comparison to its H₂O equivalents. One difference is in the stabilization of the radical electron; Hydrogen sulfide stabilizes its radical electron in a hemi-bond manner compared to the proton-transfer like fashion of [H₂O]_n clusters.

Presenter: J. Kevin Shurtleff

Other Authors: Kyle Sweetman, Austin Beatridge, Ryan Bernal

Affiliation: Utah Valley University

Presentation Title: Waste and Cost Reduction by Reprocessing Used Motor Oil into a Synthetic Diesel Fuel

Abstract: Utah Valley University has an abundance of waste motor oil (WMO) from the airplanes, motor vehicles, and utility vehicles operated by the University. Currently, there is no well documented procedure for reprocessing the WMO into a useful fuel without expensive industrial equipment. The primary goal of this project, led by Professor Kevin Shurtleff and performed by undergraduate research students, is to repurpose the WMO into a useful, synthetic diesel fuel with a cost-effective, scalable process we've developed.

Diesel fuel is a mixture of hydrocarbons. Motor oil (a heavier hydrocarbon) can be diluted with a lighter hydrocarbon, such as unleaded gasoline, to produce a synthetic diesel fuel that has comparable molecular weight and chemical properties to diesel. The two main obstacles in the reprocessing of the WMO is getting the oil clean enough for re-use and determining the optimum ratio of motor oil to the other lighter hydrocarbons in the fuel mixture. We have tested multiple ways to remove impurities. However, double centrifugation is the most cost effective and efficient method. We have prepared various mixture ratios (mol%, wt%, and vol%) of WMO and unleaded gasoline to produce an efficient synthetic diesel fuel. The goal is to produce a diesel fuel replacement for use in the utility vehicles on campus. This means that every gallon of repurposed WMO eliminates disposal costs of the WMO and saves the University the cost of a gallon of diesel fuel. In this paper, we will describe the equipment, processes, and results achieved on the project, including test results for various WMO mixtures run in a diesel powered generator.

Presenter: Sharla Winn

Other Authors: Dr. Chris Monson, Dr. Jackie Grant

Affiliation: Southern Utah University

Presentation Title: Development of a Low-cost PDMS Modular Microfluidic Device for STR Analysis of Genomic DNA

Abstract: Microfluidic devices, or micro total analysis systems (µTAS), achieve the same results as conventional assays in a fraction of the time and at considerably reduced cost. We are developing a low-cost, simple to operate and portable µTAS for short tandem repeat profiling that would be a step toward timely and efficient processing of forensic evidence.

Our device is made from PDMS, an inexpensive silicone elastomer, using a sacrificial magnesium wire to form the reaction chambers and flow channels, thus eliminating the need for expensive materials and fabrication equipment. Our design takes advantage of PDMS chemistry and the adsorption of DNA to its surface components. We alter the roughness and surface chemistry of the reaction chamber by scratching the magnesium wire before fabrication and chemical treatments prior to protein or DNA adsorption.

For initial experiments, plain, scratched (cross-hatched) and sanded magnesium wires were used to form reaction chambers in PDMS. Protein and DNA adsorption to chambers with varying surface roughness is currently being investigated by measuring retained fluorescence after incubation of Texas red-labeled bovine serum albumin or pico green-labeled DNA. Future work will involve PCR amplification on a PCR thermal cycling block. On-chip thermal cycling, sample addition, and cell lysis will be developed at a later stage of the project.

Presenter: David Allred

Other Authors: R. Steven Turley, Stephanie Thomas, Alexandra V. Davis, Margaret Miles

Affiliation: Brigham Young University

Presentation Title: How optical spacer layers could help in obtaining optical constants of highly absorbing materials in the extreme ultraviolet

Abstract: The presence of interference fringes in thin-film reflectance and transmission are invaluable in obtaining optical constants from materials. When a material is highly absorbing however, interference fringes may not be visible. Hilfiker, et al.,¹ have explored the problem of obtaining optical constants in the UV, visible and I are from highly absorbing materials using spectroscopic, multiangle ellipsometry. One particularly noteworthy technique is to place a transparent layer beneath a semitransparent metal thin-film. Light passing through the film reflecting off from the substrate and then transmitting again through the film interferes with the front surface reflected light producing interference fringes as a function of wavelength or angle that highly constrain the optical constants. We will discuss the extension of such a technique into the extreme ultraviolet, showing how it solves important problems. Aluminum looks particularly promising as a spacer layer.

1. Survey of methods to characterize thin absorbing films with Spectroscopic Ellipsometry

By: Hilfiker, James N.; Singh, Neha; Tiwald, Tom; et al. THIN SOLID FILMS Volume: 516 Issue: 22 Pages: 7979-7989
Published: SEP 30 2008

Presenter: Chin-yah Yeh

Affiliation: Salt Lake Community College

Presentation Title: New 4-Polytopes Found by Closest Packing of Spheres and Tessellation in 4-D Space

Abstract: The closest packing of 4-balls is used to find a new class of uniform 4-polytopes, besides the 64 convex 4-polytopes listed in the literature. Structures of these 4-polytopes are explained and orthographic projections presented. Possibility of tessellation of these 4-polytopes in 4-D space are discussed.

SOCIAL SCIENCE ORAL PRESENTATIONS

Presenter: Bryan Casselman

Affiliation: Salt Lake Community College

Presentation Title: A Survey of Religion: Its Development, Neurophysiology, and Current Impacts

Abstract: There are few concepts that are as universal, dividing, and controversial as religion. It is hard to think of another mechanism that is so proficient at both bringing people together, and tearing them apart. Part of its controversial nature derives from the stark contrast in what religious and nonreligious people believe is the origin of the practice. Explanations for the practice range on a fairly large spectrum. On one side, explanations of religious people revolve around belief in the sacred histories found in their texts, claiming their faith was directly inspired by acts of God, or multiple Gods. On the other side of this spectrum, many nonreligious individuals believe it to be a man made construction, some even going as far as to consider it a mental disorder. Within these two polarities are a myriad of voices, each having their own signature brand of mental gymnastics to resolve cognitive dissonance between faith and scientific discovery. Multidisciplinary research on religion, however, does not necessarily agree, nor contradict many of the most prevalent supporters and critics today. Instead science paints religion as a complex byproduct of evolutionary mechanisms, refined through time via cultural narratives, physiological phenomenon, exposure to other cultures, and innovations in technology. In this paper we will illuminate the historical and anthropological development of religion, examine its neurophysiological impact, and evaluate its psychological and sociological benefits to the individual, and its place in an increasingly secular society.

Presenter: Warren Jensen

Affiliation: University of Utah

Presentation Title: “Determined to Make Righteous Homes”: LDS expressions of masculinity and family formation

Abstract: In one of many webpages of its kind, “Why is family important?”, the LDS church explicitly emphasizes: “Let the young men lead, suggesting the deep importance of specifically male leadership positions at all levels, from childhood upward. Many offices within the male-dominated offices of the priesthood (from Bishop onward) are defined by marital status as well as gender. For young men, achieving elder status (by completing a mission), getting married, and forming a family “one that is unified under the leadership of the father/husband” is seen as a process in defining an individual’s masculinity and his broader social status as a man.

Despite this, literature on Mormon masculinity is relatively underdeveloped. In an effort to address this, my presentation will present original open-ended qualitative data gathered through focus groups with young LDS men between the ages of 20-30, an age cohort within the church that is often expected to complete missions and form families. Building off of qualitative data gathered in my focus groups and a content analysis of church documents and surrounding literature on the topic, I hypothesize that the achievement of certain indicators (elder status, marital status and family formation, etc.) inform the notion of more prestigious forms of masculinity for LDS men. Thus, I see pressure to perform “as a man” as a crucial factor that influences the lived experiences of “specifically young” LDS men, who are pursuing education, careers, and family, often within the social networks of the church. Thus, LDS constructions of masculinity uniquely emphasize family formation by linking it deeply to status indicators within the church; such an emphasis creates a “fast track” effect, so to speak, in which young men experience exceptional pressure not only to marry and have children but also to provide and establish their careers.

Presenter: Rick Phillips

Affiliation: University of North Florida

Presentation Title: Religious Detachment among Utah Mormons: Does the Internet Play a Role?

Abstract: Utah provides a natural laboratory for investigating the effects of demographic transition and technological change on religious identity and activity. Recent survey and polling data have revealed a rising trend in defection from religion in the United States. About one in five Americans now claim to have no denominational preference or formal church affiliation. Like most churches, The Church of Jesus Christ of Latter-day Saints (the LDS, or Mormon Church) has been affected by this trend. Studies show that between one fourth and one third of adults who say they were raised LDS no longer consider themselves members of the church. This is up from around 10 percent a generation ago. Moreover, studies show that rates of defection from Mormonism are rising faster in Utah and the Intermountain West than in other parts of the United States. Two hypotheses have been put forward to explain this trend. The first is that new information technologies have lured certain members away from the church with attacks on Mormon history and theology. The second is that changing demographics in Utah have transformed the state’s religious subculture, making it easier for less committed Mormons to leave the faith. This paper evaluates these hypotheses, and reinterprets of the meaning of data that seem to show that patterns of retention and disaffiliation among Utah Mormons are changing.

Presenter: Peter L. Kraus

Affiliation: University of Utah

Presentation Title: Getting it Right - A Case Study of a Six-Month Sabbatical at Home and Abroad

Abstract: Sabbaticals have long been part of the research culture in American higher education and academic libraries. A review of the scholarly literature shows that sabbaticals serve a number of purposes for librarians. By providing time for reviewing best practices at other libraries, working at other libraries within and outside the United States, or pursuing post-graduate degrees, sabbaticals have allowed those in academic libraries to improve their skill sets and knowledge base to

improve themselves and their libraries. A successful sabbatical takes planning and focus; the author of the article will use his sabbatical, which took place between July and December 2015 in Salt Lake City, Utah, and St. Stephen's House, Oxford University, as model for this primer on having a successful sabbatical.

Presenter: Dallas Blackburn

Affiliation: Salt Lake Community College

Presentation Title: Populism and Power

Abstract: Populism and Power examines the relationship between populist movements and political power in the United States. This idea is approached from a Conflict Theory perspective, which will inspect how different groups compete for the scarce resource of power. I will present a theoretical view of this relationship, which I call the populist power theory, and then apply this model to different populist movements: the People's Party of the late 1800's, and the modern Tea Party. The theory will attempt to explain how these past movements, through competition with other groups, were able to achieve political power. And then in the case of the People's Party, how political competition ultimately led to their demise. And also in regards to the Tea Party, how this group has managed to overcome competition to continue to gain political capital. After these two examples are scrutinized within the bounds of the populist power theory, I will then apply this concept to the new populist Bernie Sanders movement, which movement I will address as Our Revolution. I will demonstrate how Our Revolution has thus far followed the same general formative path and trajectory of the two previously mentioned movements, and then postulate what the future of this movement is based on the history of these examples, whether the new movement is heading towards growth or collapse.

Presenter: Courtney Strong

Affiliation: Salt Lake Community College

Presentation Title: Yoga and Addiction Recovery

Abstract: The Yoga and Addiction Recovery Independent Study is a case study composed of surveys and observational research. The research and findings are documented here and presented in conjunction with a PowerPoint presentation. The study sampled eleven women living in a substance abuse recovery facility in Draper, Utah. The process analyzes practicing group yoga in a recovery setting and the effects of socialization on the group.

Presenter: Taylor Greenwell

Affiliation: Weber State University

Presentation Title: The Economic Roots of Political Instability in the MENA Region

Abstract: The Middle East and North Africa region (MENA) has been characterized by significant political instability; and is routinely ranked as the least peaceful region in the world. This paper argues that socio-economic factors, rather than a desire for democratic institutions, are the primary driving force behind the chronic political upheaval found in MENA. With the support of four case studies (Tunisia, Egypt, United Arab Emirates, and Saudi Arabia) this paper posits that economic liberalization, structural inadequacies in MENA economies, unemployment & and a "Youth Bulge", as well as international financing practices are the main economic catalysts behind MENA's political instability.

Presenters: Matthew Clint Bisbee, Michael Jensen
Affiliation: Utah State University
Presentation Title: Regressive Effects of Environmental Regulation

Abstract: An affordable utility bill is considered to be no more than six percent of a person's income. According to recent research, however, energy costs now represent 20 percent or more of income for many American families. The discussion of energy poverty is largely absent in the debate about America's future, as the call to address climate change by reducing greenhouse gas emissions, at any cost, strongly influences policymakers. For families on fixed incomes, rising energy prices mean that the gap between what they can afford to pay and what they are paying for electricity is widening. Our research evaluates the regressive effects of environmental regulation by studying how such regulation impacts electricity prices, and, ultimately, household budgets.

Presenter: Jamie Nelson
Affiliation: Salt Lake Community College
Presentation Title: The Winner-Take-All Electoral College

Abstract: In 1787, the Electoral College was created with the sole purpose of choosing the future Presidents of the United States. As the American political process has grown and changed, so has the Electoral College; what was once a system that favored the social and political elite is now primarily controlled by state partisanship and, to a lesser extent, public opinion. As we become a more democratic society, in which all adult citizens have the right to vote, some argue the Electoral College is an antiquated system that continues to favor the elite class above the voting public. This argument has been further supported by recent discrepancies between the popular vote and Electoral College results in the 2000 and 2016 presidential elections. However, states have dramatically changed the way electors are chosen in their state; the winner-take-all electoral system has dominated the preferred selection process and electors are expected to vote for the presidential candidate who won the popular election in their state. Due to winner-take-all electoral policies, the impact of an individual vote has been greatly diminished in states with one dominate party. This fact has significantly altered presidential campaigns and the subsequent success of certain candidates. Although most presidents have won both the Electoral and the popular vote, many American citizens have called for an end to the Electoral College system and have supported a direct democratic election instead. Changing the process of electing the US President would require a constitutional amendment which is unnecessary, as statistical and historical evidence suggests the true "Electoral College problem" rests in the state governments that have create partisan policies and have diminished the value of an individual vote in their own states.

Presenter: Ty B. Aller
Other Author: Dr. Kathy Piercy
Affiliation: Utah State University
Presentation Title: Social Policy: A Guide for Social Scientists in the Academy

Abstract: As academic researchers, social scientists are among the most knowledgeable groups of citizens regarding social policy issues. Despite their expertise, many researchers do not engage in the legislative process to influence policy decisions. Reasons for this lack of engagement often include not fully understanding the legislative process or lack of confidence to effectively engage policy makers. To build researcher's understanding and confidence to influence social policy, this presentation draws on the experience of one social scientist's efforts to influence policy to improve college students' mental health. In detailing this social scientist's experience, this presentation briefly describes the legislative process in Utah and then provides suggestions on how social science researchers can more effectively engage in the policy making process. More specifically, this article focuses on the ten steps to civic engagement outlined by Graham and Hand (2009) by explaining three basic ideas: 1) identifying a problem and formulating a solution; 2) building support for your policy initiative; and 3) taking action by engaging constituents and policy makers. Suggestions on how researchers can use their expertise in conjunction with these three basic ideas to influence policy will be discussed.

Presenter: Logan Hemmert

Other Author: Dr. Ryan Yonk

Affiliation: Utah State University

Presentation Title: How does Ranked-Choice Voting impact incumbents?

Abstract: The exploration of electoral systems has long considered the impact that alternative voting systems could have on electoral outcomes. Alternative voting systems have long been assumed to impact electoral process, vote choice, and candidate success. Building on the earlier work and expanding the data used in “Trading places and Extreme Vote Makeover” by Yonk et al, we explore the impact of ranked choice voting in the City of Minneapolis, MN.

In this paper, we examine the impact that instant-runoff voting has had on incumbency rates in Minneapolis. Using data from mayoral and city council election ballots in Minneapolis from 2013, we examine the impacts of ranked choice voting on the engagement of elected officials and voters in the electoral process. It is well known that incumbents have many advantages over challengers, and systems like ranked-choice voting that take multiple voter preferences into account, may afford more protection to incumbents. Using the actual individual vote data for the city, we test that possibility empirically.

Presenter: Peter L. Kraus

Affiliation: University of Utah

Presentation Title: A librarian runs for political office (or Cincinnatus looks outside the Ivory Tower)

Abstract: Librarians have long been activists for social and political causes outside of their profession; however, few take the crucial step and actually run for political office at the local, state, or national level. In March 2014, after being involved in local and state politics for over ten years and volunteering for political campaigns at the local, state, and national level, and with some encouragement from individuals I knew in political and academic circles, I threw myself into the political realm by registering to run as a (moderate) Republican for a House seat in the Utah Legislature. Little did I know that, as an academic librarian, this would be an incredible learning experience. I wish to emphasize that this is not an article on how to run for office (there are numerous articles and books that discuss this subject). Rather this is an overview and case study of an academic librarian who became involved in the political process and exercised his right to run for office to represent the community in which he resides.

Presenter: Chantelle Shapcott

Other Authors: Justin Felkins, Brooke Bradford, Jessica Hill, Bryan Dalley

Affiliation: Utah Valley University

Presentation Title: Implementing CUR recommendations: Expanding the high impact practice of undergraduate research within the curriculum

Abstract: Although UVU implements most of the 10 high impact practices suggested by the College Association of American Colleges & Universities (AACU), there is a weakness associated with the implementation of undergraduate research. We implemented a large-scale, faculty supervised, model of scholarship with a peer-mentorship component. The present project recruited a subset of 25 at-risk PSY1010 students enrolled in a large hybrid section over Spring 2016. During the off-day for the hybrid course, students met with a peer-mentor to learn the basics of researching human behavior. Throughout the semester, students conducted four mini-projects that allowed them to explore their own critical questions and ideas within specific boundaries. Two higher-achieving junior/senior behavioral science students were compensated to act as mentors to at-risk students. The mentors met individually with each of their 12-15 students for an hour during the week to assist them with coursework for either course or research. Moreover, we implemented the same scholarship model with another 25 at-risk PSY1010 students within a large hybrid section over Fall 2016. Throughout Fall 2016, students conducted the same projects without the influence of peer-mentorship.

In order for retention efforts to be more effective, they must go beyond mere social support from student affairs programs (c.f. Nagada et al., 1998; Tinto, 1993) to include active academic support, such as peer mentorship. We propose that introducing

peer mentorship in general education classes will yield greater student retention, particularly for at-risk students. Moreover, we predict combining undergraduate research experiences with peer-mentorship will produce transferrable academic skills. Lastly, it is our intent to model self-regulation of learning through early, high-impact interventions.

Presenter: Catherine Stoddard

Other Authors: Dr. Barrett Bonella, Dr. Corina Tadehara

Affiliation: Weber State University

Presentation Title: Veteran's perception of the Department of Veterans Affairs

Abstract: When military personnel return from their service, they often experience a variety of medical, psychological, financial, social, and educational needs that are supposed to be met by the Department of Veterans Affairs (VA). The purpose of this study was to consider what the VA system looked like from veterans' points of view and how the VA helped shape their own self perceptions as veterans. Ten veterans were interviewed using a set of twenty-five questions relating to their military service, their understanding of the VA healthcare system, and their own experiences with the VA. The interviews were recorded, transcribed, and later analyzed with the help of the program ATLAS.ti 7. Journals were also kept regularly to ensure objectivity and self-reflection were accounted for in the study. Issues such as trust, experiences with the health care system, positive and negative interactions with all aspects of the agency, and perception of themselves as priorities of the government were based on VA funding were discovered. The results indicate several areas in which the VA fails to provide quality services for veterans, though such failings are perceived to be results of antiquated policies, inflexible bureaucracy, and politically low prioritization of veterans after they've done their part as soldiers.

Presenter: Shadman Bashir

Affiliation: Dixie State University

Presentation Title: Space-time Signatures in Laws, Societies and Conflicts

Abstract: The term Space-time is used in Physics and Mathematics to identify a model that combines space and time into one single interlinked sequence. Space-time is not just a logical and scientific creature limited to the study of extra dimensions or the geometry of sub atomic particles in quantized space-time. It is a logical primer which is fundamental to the study and proper understanding of many of the most complex and controversial issues present within traditionally nonscientific academic fields. The space-time primer can be used to understand and classify diverse issues ranging from Contemporary Suicide Bombings to the legality of the relationship between Romeo and Juliet, from Divine Dogma to the logic of Atheism, from Eight Amendment of the United State Constitution to the legal status of punishment by Stoning to Death and many more. There are distinct space-time signatures stamped as footnotes on every human social practice throughout our history, and we in most cases try to understand the practice without reading the signature. This paper is a brief intro and explanation of the application of space-time signatures in academic fields including but not limited to Law, History, Politics, Crimes and Conflicts.

Presenter: Hannah-Lee Brau

Affiliation: Brigham Young University

Presentation Title: How Does Materialism Influence Financial Problems in Marriage?

Abstract: In this paper I first analyze the research findings of two academic studies, providing details and findings. In the second section I summarize two magazine articles that give practical counsel for marriage. In the third section I provide a discussion of the correlation between these two sources of knowledge.

In the first article, "Materialism, Perceived Financial Problems, and Marital Satisfaction," by Dean, Carroll, and Yang (2007), the topics of materialism and marriage are carefully studied. The authors specifically study three research questions: 1) Is spousal materialism associated with the relative frequency with which spouses perceive financial matters to be a problem

in their relationship?; 2) Does the strength of the association between perceived financial problems and marital satisfaction differ for materialistic and nonmaterialistic spouses?; and 3) Do spouses' levels of materialism affect couple reports of financial problems and marital satisfaction?

The second article, "Materialism and Marriage: Couple Profiles of Congruent and Incongruent Spouses" by Carroll, et al. (2011), is more succinct than the first article because it is an extension of the first article and deals with similar key variables and theory. The authors extend the first article because, "the study did not consider spouses' materialism in relation to their partners' materialism. Two additional research questions are posed: 1) "Are spouses' levels of materialism significantly related to one another and to what degree do married couples exhibit congruent or incongruent patterns of materialism" and 2) "How are couple patterns of congruence or incongruence in spousal materialism associated with marital characteristics and outcomes?"



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