



GOSHEN COLLEGE
8TH ANNUAL UNDERGRADUATE STUDENT RESEARCH
SYMPOSIUM
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ABSTRACTS

Suzi Arsenovic
Cold Connections in Jewelry-Making and Small Sculpture
Department of Art

This paper presents research in cold connections (mechanical ways of joining materials) in jewelry making and small sculpture conducted during the summer of 2005 as part of the Maple Scholars program. Every week, one cold connection technique was chosen and experimented with. Tests as well as pieces designed with cold connections in mind were made. Cold connection techniques focused on were the following: rivets, tabs, hinges, textile techniques, and a combination of various techniques. The paper will present the knowledge gained about materials and technique in response to extensive play and experimentation.

Krista Bergey
*Clinical vs. Actuarial Decision Making: Results from the Laboratory
Applied to Every Day Decisions*
Department of Psychology

Decision making requires considering any number of factors. With the goal of making the best decision, the individual often reaches conclusions through intuition, relying on his or her subjective or “clinical” experiences while giving little consideration to what is factual or “actuarial.” The science of psychology has demonstrated that systematic, objective decisions based on empiricism are usually superior to an individual’s intuitive choices. Actuarial judgments need not be restricted to the laboratory. This paper investigates every-day settings where decisions may be more accurately made by relying more on actuarial methods and less on intuition. The notion of the actuarial approach as dispassionate and the willingness to relinquish error-laden intuition are also discussed.

Jordan Buller, Daniel Constantine, and Anna Herdeck
The Relationship Between the Length of Marriage and Perceived Important Factors
Department of Psychology

Although there is much research examining the importance of various factors in a marriage, little has been done to examine how such factors change and evolve over the length of marriage. This study used a simple survey technique on a convenience sample of 62 people, 31 males and 31 females. The survey questions included rating the importance of particular factors (ie. trust, sex, love). The survey was given to couples who had been married for between 1 and 55 years. The

hypothesis of this study was that as years of marriage increase, the factors which are viewed as most important will also change. The findings of this study found minimal differences between the factors which were rated as important by people who had been married for different lengths of time.

Kirstin Docken
*Apathetic Youth to Passionate Believers: The Youth of the
Ethiopian Evangelical Church Mekane Yesus*
Department of History

During the years of the Revolution in Ethiopia (1974-1991), hundreds of thousands of Evangelical Christians were persecuted for their beliefs. This is a story about the youth of the Ethiopian Evangelical Church Mekane Yesus, who were denied education and jobs, were willing to be beaten and even taken to prison, because they refused to turn their backs on God and their church. Even more, it is a story of a church, and how it grew out of a foreign mission-funded history to be a self-supporting, truly Ethiopian church, and how it transformed its indifferent youth members into zealous church leaders, willing to withstand the severe consequences of holding firm to their faith.

Rachel Eisenstat
Barriers to Women in Post-Conflict Reconstruction: The Former Yugoslavia
Department of Peace Justice and Conflict Studies

Before the ethnic tensions erupted into violent conflict in the former Yugoslavia during the 1990s, community women's groups were already working together across ethnic "barriers." Many of these groups were able to continue these relationships during the various outbreaks of violence and through post-conflict reconstruction. That women maintained multi-ethnic networks during a war characterized by ethnic tension should situate these women at the forefront of the peacemaking and reconstruction phases in the former Yugoslavia. This paper will explore three areas that have all seriously impeded the immense potential of women to contribute significantly to peace, stability, and reconciliation within the former Yugoslavia: 1) the media's propagation of the image of women as helpless victims; 2) academia's general failure to research and analyze the work that women are doing; and 3) the exclusion of women from the decision-making and implementation processes of international aid, development, and reconstruction efforts.

Garrett Gingerich and Peter Widmer
Planning and Executing a Sustainable Nonprofit Organizational Strategy for the 21st Century
Department of Business and Accounting

The environment which we live in has become an invariable for change. Diversity reigns in almost all settings, including Marshall County, Indiana. Here the Marshall County Neighborhood Center lies in the heart of the community providing goods and services to those struggling with the daily grind life brings to them. Looking to expand and spark the community's interest in what the Neighborhood Center provides, Jerry Nikitas, director of the center, along with the Indiana Careers Consortium created a unique opportunity for local

colleges and universities. Partnering together to give students a real life situation from which to work at, each institutions sent a select team of business students to help Jerry and the center create and plan a strategy feasible to execute with the limited resources available.

Cassie Greer

Rupture in the System:

A Girardian Perspective on Social Reform through Modern American Drama

Department of Theater

Human beings are distinct from other beings in our imaginative and creative capacities. We see the world around us and imitate parts of it, breaking down reality and piecing it back together in new ways. Twentieth century philosopher and scholar René Girard proposes the idea of imitation as the essential human characteristic. In Girard's philosophy there exists an innate paradox: "mimetic desire" accounts for the presence of rivalry, violence and destruction in human society, yet mimetic desire is also what sustains humanity. Contemporary theologian James Alison, using a Girardian understanding of reality, proposes a solution to the problematic paradox of mimetic desire by suggesting that a human awareness of our own predicament gives hope that violence and rivalry will not overrule everything else. We must look for "an unexpected rupture in the system" that provides us with the ability to be conscious of our system. Theatre is a unique tool that uses imitation of reality to expose the system of mimetic desire and violence to audiences. This paper explores three examples from modern American drama - Arthur Miller's *The Crucible* (1953), Tennessee Williams' *Orpheus Descending* (1957), and Moises Kauffman's *The Laramie Project* (2000) - as catalysts for a reform of the mimetic rivalry system.

Hope Grieser

Redefining Honor: Intertextuality and Mimesis in Hosea 1-3

Department of Bible, Religion and Philosophy

Rereading Hosea 1-3 through the lens of intertextuality and mimesis of other ancient texts, the love story of Hosea and Gomer, as a metaphor for the relationship of God and Israel, becomes a redefinition of acceptable behavior and a counter-story to other mythological stories of adultery. This paper addresses the vast difference between the love and forgiveness Hosea shows to his adulteress wife and the violence and destruction executed by Atreus, a violated husband, in Greek mythology.

Katie Harnish and Krista Bergey

Public Displays of Affection (PDA)

Department of Psychology

Public displays of affection (PDA) are any behavior that involves romantic interpersonal touch (hand holding, hugging, kissing, etc.) in the public realm. There are many mitigating influences on PDA. In order to see if time spent on a college campus was positively correlated with aversion to PDA, students (n= 312) were surveyed on the Goshen College campus. They reported personal feelings toward PDA as well as their reasons for those feelings. Environment did affect attitudes toward and willingness to engage in PDA. Personal preference rather than attitudes of the community was cited as the biggest reason for willingness to engage in PDA.

Suggestions for the future include longitudinal research as well as surveying attitudes toward other forms of PDA.

Elizabeth Heiks
The Ragtime Banjo
Department of Music

The banjo played an integral role in the development of Ragtime: from its African origins to the southern plantation culture, the banjo represents black folk music in a popular genre of the 1900's. A brief survey of scholarship on Ragtime, this paper will focus on the resemblance between Ragtime piano technique that resembles the technique of the banjo to establish banjo's influence. Using Scott Joplin's Maple Leaf Rag as an illustration, the paper will demonstrate how the popularization of both instruments facilitated the style of Ragtime.

Nathan A. Horner
A Perspective of Jesus from King Herod the Great
Department of Bible, Religion and Philosophy

Drawing upon the best of current historical research and the representation of Herod in the Gospel of Matthew, this first person narrative attempts to present a vivid portrait of King Herod the Great as a powerful, arrogant man who did whatever was necessary to maintain power in Judea. While contemporary scholars may question the historicity of the story of the slaughter of the innocents, in this narrative, the death of the infant boys in Bethlehem becomes a means of capturing the tension between his grasp of Judaism and his tight fist rule. Herod's arrogance extended to a program of "repairing" not just the Temple in Jerusalem but Judaism itself.

Dawit Yehualashet Kebede
Ethnic Conflict and Civic Institutions in Ethiopia
Department of Peace Justice and Conflict Studies

The main purpose of this paper is to do some preliminary investigations on the role of informal civic institutions in Ethiopia and their connection with interethnic conflict. The paper will focus on two institutions *Iddirs*, funeral associations, and *Iqubbs*, rotating credit associations. The major assumption of this paper is that the higher the number of interethnic civic institutions, the lower the number of ethnic conflict in a given region. The major unit analyses are the nine regions in Ethiopia divided primarily along ethnic lines. This work has been inspired by some recent publications on civic life and ethnic conflict; of particular interest is *Ethnic Conflict and Civic Life: Hindus and Muslim in India* (2002 Yale University) by Ashutosh Varshney.

Luke D. Kreider
Pacifism and Military Service in the pre-Constantinian Church
Department of Peace Justice and Conflict Studies

The issue of military service in the early church has been the subject of significant scholarly debate in the last half-century. Interpretations of the pre-Constantinian understanding of the

proper Christian position concerning war and the military vary widely, as the available literature from the first four centuries of Christian experience are vague, not altogether consistent, and ultimately inconclusive. The question, however, continues to be debated, as pacifist scholars attempt to paint a picture of early Christianity that holds nonviolence as a fundamental tenant of faith, and just war theorists find the reality of early Christian thought and practice to be in basic continuity with the post-Constantinian ideas of just war theory. This issue has been given so much attention perhaps because religious scholars and historians alike tend to regard the earliest known forms and ideas of a movement as uniquely authentic and authoritative. Whether or not such an approach to history is advisable, the ideas of the early church concerning the issues of pacifism and military service are valuable at least to the extent that they allow for a more thorough and comprehensive understanding of the evolution of Christian thought on questions of war, peace, and the believer's relation to the state. In this paper I will discuss the work of three scholars that take varying approaches and opinions to these questions. First I will explore Lisa Sowle Cahill's interpretation of two important thinkers of the early Christian church. Next, I will look at Allen Kreider's dissection of the early Church Orders and their position on the issue of military service. Finally, I will discuss John Helgeland's important contribution to this area of study, as he looks at similar sources, but comes to significantly different conclusions.

Nicholas Loewen

Emotional Petrification, Disabling Symmetries, and the "cue for passion" in Hamlet
Department of English

One question always arises when studying the play *Hamlet*: "Why does Hamlet delay his revenge on Claudius?" Through a comparative analysis of essays by David Scott Kastan and Corina Peterson, I investigate the possibilities for Hamlet's delay while analyzing the converse points of Kastan and Peterson's criticism. Aided by the approaches of New Historicist and psychoanalytic theory, I uncover Hamlet's underlying insecurity with revenge, which he reveals through an ambivalence toward vengeance, an aversion toward imitation, and the absence of an internalized purpose for action.

Nathan L. McOwen

Uracil Protein Channels in mutant Saccharomyces Cerevisiae
Department of Biology

This paper discusses research conducted the summer of 2005 in the Maple Scholars program on genes in *S. cerevisiae* that can mutate to code for a different transport protein when the normal transport protein has lost functionality. Some proteins in yeast transport the amino acid uracil into the cell, uracil being very important in RNA. However, if the protein that transports uracil into the cell is somehow mutated or deleted altogether, then it sometimes a gene encoding a different transport protein will mutate and begin producing proteins that will import uracil instead of the nutrient it used to import. The purpose of the research is to discover what genes are capable of mutating to make this possible.

Craig Mast
Faith Under Fire: Mennonite Men in the Military During the Vietnam War
Department of History

Men from Mennonite or related Anabaptist groups had served in relatively high numbers during World War II. Consequently, the Mennonite church worked frantically in the post-war period to shore up its peace teaching and to create programs like I-W which was supposed to be a more attractive alternative to military service than CPS had been during the war. With the ensuing escalation of the Vietnam conflict by the Johnson administration in the mid-1960s, the Mennonite Church was faced with yet another test of the nonresistant position. While much scholarly attention has been given to how I-W and other alternative programs fared during this time, almost nothing has been said about the men who, like their predecessors in the 40s, entered the military. The story of Mennonites in the military during the Vietnam conflict not only offers insight into the experiences of the individuals, but also that of I-W, the Mennonite Church, and even the broader American society of the 1960s and 70s.

Hilary A. Mayhew
Remembering Victims: Historical Memory in Israel/Palestine
Department of History

Though Jews and Arabs of the Palestinian region at one time had 'rich and parallel histories,' the events of the last century have created psychological and physical schisms between these groups, leading them to understand their identities and interests as mutually exclusive. In a psycho-social analysis of conflict, a victim mentality can lead to a sense of helplessness that makes alternative solutions seem impossible or undesirable and any negotiation a weakness that will be exploited by the enemy. By examining opposing historical narratives, one hears both the Jewish people of Israel and the Arabs of Palestine operating out of a carefully constructed victim's mentality, which is a central obstacle to peace that reconciliation-programs try to overcome. This paper examines the disparate historical narratives of the Israeli and Palestinian communities, and how they have led each group to see itself as a victim fighting for survival, thereby eliminating the possibility for creative or cooperative solutions between peoples. The paper also discusses the principles of the programs like Seeds of Peace, an example of initiatives which seek to address the victim's identity of the two communities through the sharing of personal narratives.

Christine Miller and LisaRenee English
The Effects of Prairie and its Proximity on Density of the Soybean Aphid
Department of Biology and Environmental Studies

The soybean aphid (*Aphis glycines*) is a soybean pest introduced to North America from China in 2000. Damage includes stunted plant growth, yellow puckered leaves, and reduced pod numbers and potentially leads to yield loss. Pesticides and natural enemies can be effective in limiting insect pests, but non-target-specific pesticides kill natural enemies as well as target pests. The present study introduced soybean aphids to soybean hosts planted within an old growth prairie, on the prairie edge adjoining a mowed field, 10 and 20 meters from the prairie edge into an abandoned field. Aphid density levels at introduction were 300 individuals per plant. Each distance level contained 18 plants within each of three replicates. Aphid populations and host plant growth success were measured 10 and 20 days after introduction. At the

conclusion, aphid populations were significantly different and at the following relative abundances: plants within the prairie < edge < 10 m < 20 m. Similarly, significantly more plant damage due to predation was found the more distant soybeans were from the prairie. Further research into ecological control is warranted; non-chemical techniques may be significant parts of future pest management protocols.

Marelby Mosquera

Blood Price: Witness to a Crime, A Blessing, and a Miracle
Department of Bible, Religion and Philosophy

In order to represent the logic of the acknowledgement by a lone Roman Centurion at the foot of Jesus' cross that they had crucified an innocent man, this paper blends scholarship and story telling. Current research in the social and political realities of a Roman soldier indicates how an unsuspecting warrior would plausibly react to the ultimate act of love and forgiveness.

Dominique C. Burgunder-Johnson

Black, White, Mennonite: A History of African Americans at Goshen College
Department of History

A general history of African American students at Goshen College. A particular focus will be on Goshen College's "high" period of African American student enrollment between the late 1960s and early 1980s. Examines possible explanations for the high level of black student enrollment during this time period. Offers some insight into the various experiences of African Americans enrolled at the time. Explores the various initiatives and programs designed to address the enrollment of African American students at Goshen College. Also includes a look at more recent developments in African American student enrollment at Goshen College since the 1980s.

Jayme Saner

Childhood Obesity: An American Epidemic
Department of Nursing

Childhood obesity has become a major focal point in pediatric health. The incidence of such obesity has risen dramatically over the past 20 years, and the health effects have become more detrimental. Since children now spend a majority of their time in a school setting, it is here where the most effective interventions should be enacted.

Glenn Schumacher

Sporting a Name: The Mascot/Team Name Controversies of the University of Illinois-Urbana-Champaign and Miami University-Oxford.
Department of Sociology

School athletic teams have long used Native American related mascots and team names throughout their history in the United States, including schools such as Dartmouth and Stanford. During the late 1980's as stronger opposition from American Indian communities were

expressed there has increasingly been a large push to eliminate the use of American Indian team names. While some schools have decided to change names and /or eliminate offensive mascots, others have resisted and continue using American Indian mascots today despite the rise of controversy and threatened restrictions placed by NCAA. This study takes a historical comparative analysis of two case studies, Miami University of Ohio and the University of Illinois to examine what factors led to the ultimate change for Miami University and the forces that continue to resist a name change for University of Illinois.

Kathryn Stutzman
Activity Partitioning in Two Species of Hermit Crabs
Department of Biology

Sympatric species often shift activity patterns temporally to avoid competition. This pilot study was designed to ascertain activity patterns in two species (*Clibanarius tricolor* and *Clibanarius antillensis*) of intertidal hermit crabs and to determine if those patterns would differ when these species were housed together compared to when they were housed separately. Fifty individuals of each species were placed into separate plastic pools and 25 individuals of each species were placed together into a third pool; each pool was supplied with substrate and water from the collection location. Activity of the two species was monitored at 0100, 0700, 1300, and 1900 hours for three days. *Clibanarius antillensis* was found significantly more active at 0100 and 1900 hours ($P < 0.0001$). This same species was found to have a positive relationship between activity and water temperature ($P < 0.0001$). The two species seemed to be more active at opposing times. In addition, species differences between activity in relation to time and temperature were more pronounced when these two species were housed in the same tank than when housed separately, suggesting that these sympatric marine hermit crab species temporally partition themselves by alternating times of activity to avoid interspecific competition.

Sarah A. Thiessen
Determination of Caloric Content in Chocolate Bars and Sweeteners
Department of Chemistry

Cocoa has been shown to have health benefits in terms of antioxidant protection.^{1,2} However, a supposedly beneficial bar of dark chocolate may have more calories than advertised. Total and metabolizable caloric contents of several chocolate bars and sweeteners were determined using bomb calorimetry and compared to labeled values. Percent differences between experimental and labeled caloric contents of the chocolate samples ranged from -1.5(8)% to 26(1)%. The results suggest that differences do exist between actual and labeled caloric contents of chocolate bars. For the sweetener samples, sucrose was found to have the highest metabolizable caloric content per serving at 17.1(4) kilocalories per serving. The metabolizable caloric content of sweeteners per serving was found to depend on both the degree to which the sweetener is metabolized and the level of sweetness. Bomb calorimetry was found to be an adequate and practical method for determining total caloric content, but determination of metabolizable caloric content was found to require further analysis of individual ingredients.

Joshua Tyson
Religious Intentions of the Founding Fathers
Department of History

In this paper, I argue that the U.S. founding fathers never intended for the United States to be a Christian nation, or to establish a national religion. I examine the Constitution itself as it relates to religion, as well the religious beliefs of a number of the most significant founding fathers, including Thomas Jefferson, Benjamin Franklin, John Adams, and James Madison. I also inspect the 1797 Treaty with Tripoli, a little-known document that both in its text and by its approval by the U.S. Senate upholds the church/state separationist perspective. Finally, I consider what implications this conclusion has for us today.

Jenna Wysong
Intentional Ambiguities: Shakespeare and Anti-Semitism in The Merchant of Venice
Department of English

The intentional ambiguity of Shakespeare's portrayal of Shylock in *The Merchant of Venice* acquits him of anti-Semitism because it forces audiences to examine their prejudices. First, I define the ambiguity of Shakespeare's treatment of Shylock by exploring the ways in which it both adheres to and deviates from anti-Semitism in Elizabethan England. Next, I demonstrate why the presence of hypocritical Christians in the play and the status of usurers in Elizabethan England highlight the intentional ambiguities that cause audiences to question their prejudices. Finally, I explore how modern audiences can respond to *The Merchant of Venice* and the ambiguous Shylock.

Rachel Yantzi
Health Concerns of the Young Female Athlete: The Female Athlete Triad
Department of Nursing

The emotional, social and physical health benefits of physical activity are well documented. Unfortunately, for some young female athletes, athletic participation has become a serious health risk. Common personality characteristics of elite athletes such as perfectionism and some degree of obsessiveness are known risk factors for the development of the Female Athlete Triad (Davis & Strachan, 2001). As noted in the name, the Female Athlete Triad consists of three interconnected disease processes; disordered eating, amenorrhea and premature osteoporosis. Disordered eating may include calorie restriction, weight loss, vegetarianism or fat restriction and is often the root of the triad (Benson et al, 1996). Amenorrhea occurs as the body loses its ability to maintain a pregnancy due to loss of body fat and hormonal disruption (Cumming & Cumming, 2001). Finally, corresponding hormonal changes inhibits the body's ability to deposit calcium in the bone, resulting in premature bone demineralization (Cumming & Cumming, 2001). Both the short and long-term health risks associated with this disorder are significant.

A number of community members including an athletic trainer, cross-country coach, volleyball coach and nurse practitioner were interviewed to obtain current opinion and practice concerning the female athlete triad. A literature review was also performed to discover current methods of primary, secondary and tertiary prevention of the female athlete triad. Common themes included hormone replacement therapy, calcium supplementation and education of athletes, families and

communities. Prochaska and DiClemente's Transtheoretical Model of Change was used to discuss the importance of client willingness to change (Bass et al., 2001). The female athlete triad is a disorder with a very complex etiology, stemming from psychological factors such as poor body image, competitiveness and perfectionism. The consequences however, can drastically affect the physical health of the female athlete.

Laurel J. Yoder

*The Mennonite Medical Mission and the Development of Meserete Kristos Church
in Ethiopia, 1945-1978*
Department of History

Mennonites began relief work in Ethiopia in 1945, and though Haile Sellassie's government would not allow them to evangelize the "already Christian" Orthodox population, the hope was to establish churches in the areas that they started hospitals, clinics, and schools. The Mennonites ran a clinic in Bedeno, and hospitals in Deder and Nazareth--the latter being a "closed" area to evangelism. Though the Meserete Kristos Church originated with these missionary efforts, I argue that in the context of African revival religion, the hospitals provided a stable center for a church that was on its own blossoming trajectory.

Laurel J. Yoder

The Absence of the Mother in Shakespeare's The Merchant of Venice
Department of English

A notable quality of Shakespeare's plays--especially the comedies—is the lack of mothers as characters or even references. The unique qualities of *The Merchant of Venice* normalize the exclusion of the mother: even though family is an important piece of the play and females have some crucial roles, mothers are ignored and excluded in a way that profoundly shapes the way we interpret the text. The absence of mothers affects the construction of marriage, gender issues, and misogyny.