

16<sup>th</sup> Annual Goshen College Student Research Symposium  
April 5, 2014  
Titles and Abstracts

Christian Allebach  
*A Comparison of Anabaptist and Islamic Environmental Ethics*  
BCA Program at Philipps-Universität Marburg Germany  
Advisor: Carrie Dohe Ph.D.

Martin L. Banda  
*Identifying Genetic Suppressors of UNC-53*  
Maple Scholars Program  
Department of Biological Sciences

Cell migration is one of the most studied areas in Biology. Understanding the precise mechanisms of cell migration can contribute to our understanding of diseases and their processes. The understanding of cell migration plays a critical role in developing solutions for diseases, such as, cancer (metastasis), Neurodegeneration (e.g Alzheimer's) and immune dysfunction (white blood cell movement). Our role in this experiment was to identify suppressors of a gene called UNC-53. This gene is involved in the migration of cells in organisms. The NAV family in human beings is homologous to the UNC-53, they are involved in migration of neural cell bodies and other cell types. To identify genetic suppressors of UNC-53, we used approaches, such as, forward and reverse genetics. Our model organism was *C.elegans* and we worked with different mutated strains of the UNC family. Our methods included inducing second site mutations to reverse a mutant phenotype, this was done to identify genes that can reverse or suppress a particular mutation. We also minimally worked with BLAST and other genomics databases in search of genes that physically interact with UNC-53. In our search we identified two true suppressed animals. However, we were unable to identify the genes that reversed the mutation. Some future routes for this research would be identifying the genes causing the suppression of UNC-53 mutation and working elaborately with BLAST and other gene databases to identify candidates that physically interact with UNC-53.

Maria A. Bischoff and Juliana Alves da Silva  
*Reasons for Enrollment at Goshen College*  
Department of Communications  
Advisor: Professor Duane Stoltzfus Ph.D.

This project explores the question of why students come to Goshen College, in particular how the religious background of the school affects the decision of students to attend Goshen. We will analyze the various reasons students come to

Goshen, specifically whether they come for academics, scholarship, religious affiliation, regional location, or based on their family history at the school. We hypothesize that the religious affiliation of the school will have a major impact on students coming from the United States, but will have less of an impact on international students.

Joelle N. Friesen  
*Peter and Cornelius: A Revelation for the Church*  
Department of Bible, Religion and Philosophy  
Advisor: Professor Jo-Ann A. Brant Ph.D.

In Acts 10, the story of Peter and Cornelius, as told by Luke, serves as a turning point in the New Testament. The dual stories and eventual meeting of the apostle and the Roman centurion begin a movement that results in extending the Church to all people, including the Gentiles. The story cleverly utilizes both rhetoric and poetics to convey the significance of the meeting between the two men. Specifically, an emphasis on providential nature, a unique travel narrative, and a dichotomy between values of clean and unclean convey the importance of this pivotal account. Ultimately, we are commanded not to profane that which God has made holy and are reminded of the timeless message of God's universal love.

Aaron August Kauffmann  
*Observed Rotifera and Acid Phenomena on Algae (PL3LC) Harvest Potential*  
Maple Scholars Program  
Department of Biological Sciences  
Advisor: Professor Emeritus Stan Grove Ph.D.

During the 2013 Maple Scholars program a sub-project of *AlgaeTown* looked at several variables to determine effects on algal growth. The variables these projects observed included rotifer contamination and the effects of acidification on algal sedimentation. Knowing the effects of some phenomena observed in open algae systems is important to efficient "crop" production. With sufficient growth rate and yield the potential applications of algae are very diverse. Project test replicates were too few for results to be of more significance other than making recommendations on further research. However, general conclusions can be drawn from empirical observations. The presence of rotifers in algal solutions tends to increase levels of ammonia from waste. This ammonia is in turn converted into nitrates used by algae for growth. For the acidity tests it appears as though sedimentation is not significantly increased in acidic media for *AlgaeTown's* strain PL3LC.

Timothy J. Keiderling  
*Global and National News Awareness at Goshen College*  
Department of Communications  
Advisor:

Global Citizenship is Goshen College's fifth core value. Yet the idea in itself is difficult to quantify. To what extent can Goshen College students call themselves global citizens? How can the global citizenship of a Goshen College student be measured? One would think that students who attend a college in which global citizenship is prized would be well informed about news and developments in countries around the world, perhaps especially in those countries that send students to Goshen College or in which students spend three months as part of SST. And as a whole, it would seem that Goshen College should be home to students who care about what goes on in their country and the world generally. Yet researchers have found that young Americans are increasingly unaware of news and disengaged from national and international events. Is this true of students on this campus? In this research study, I plan to find out how aware Goshen College students are of global and national news.

Oscar Kirwa  
*Preservation of Mara Culture*  
Maple Scholars Program  
Department of History  
Advisor: Professor Jan Bender Shetler Ph.D.

Sara R. Klassen  
*Authoring Imagination: Story Spaces as Peace-Building Platforms*  
Department of Peace, Justice and Conflict Studies  
Advisor: Professor Joe C. Liechty Ph.D.

In this thesis I argue that a permanent community “story space” is a peace-building platform according to John Paul Lederach’s definitions in *The Moral Imagination*. As an adaptive, creative place in which different segments of a community can convene to imagine new projects, activities, and collective identities to respond to continually arising conflicts, a story space fosters what Lederach calls “moral imagination,” the key human capacity for social change. I analyze Lederach’s *Moral Imagination*, fitting my “story space” concept into his frameworks and then propose that story space should be rooted in and guided by narrative theory. I explain in detail both Lederach’s key facets of peacebuilding platforms and the practices of narrative theory that bring Lederach’s ideas to action.

Sunday Mahaja  
*Twelve Tribes (God's People)*  
Department of Art

Advisors: Professors Merrill Krabill MFA, Kristi Glick MFA,  
Randy Horst MFA and John Mishler MFA

As modern technology takes over our world and changes our lives, we tend to leave our beautiful and ancient ways behind. We begin to look at the world through different lens with modern technology speeding us along and pushing us to live a fast life. Indigenous people and their stories are quickly being forgotten. As artists we can capture a moment in history and preserve it for future generations. One of the ways we can do that is by depicting indigenous people and their traditional ways of life in various mediums. In my paintings I made portraits of many different tribes and native people in their different regalia ranging from a high class to a low class. I am influenced by indigenous African people because of where I am from and you can see that reflected in my art. To show the rawness of indigenous life I use strong textures and bold colors.

Katherine G.N. Miller  
*The Beautiful Voice: A Demonstrative Lecture Recital Comparing the  
National Schools of Singing*  
Department of Music

Advisors: Professors Debra Brubaker D.M.A. and Matthew Hill D.M.A.

The four major western National Schools of Singing have developed along a similar timeline but independent of one another due to national aesthetic and tonal preference. Each National School of Singing focuses on the expression of text through varying vocal techniques unique to each school. This study looks at each of the techniques found in the schools through the lenses of vocal health and their efficacy in translating national preferences. Each National School of Singing is paired with two songs used to demonstrate technique, and in doing so illuminates national aesthetic and tonal preferences.

Logan A. Miller  
*Who Listens to Americana Music and How Do They Do It?*  
Department of Communications  
Advisor: Professor Duane Stoltzfus Ph.D.

The term "Americana Music" is, relatively speaking, very new. There are some that have claimed that the inclusive nature of Americana as a musical genre, while attractive to many musicians, quickly becomes a downfall in defining the genre. Because of these two factors, Americana music is difficult to define. But more importantly, a study carried out in 2008 suggested that there simply are simply not

a lot of people that even know the genre existed to begin with. Therefore, rather than tackling the definition of Americana by means of its consumers' analysis, I am more interested in analyzing the consumers themselves.

As a project for Communication Research and under the direction of Duane Stoltzfus, I intend to conduct a survey to the Goshen College campus that will shed light on this topic. The survey will inquire about general demographics of the respondents, as well as their most commonly used methods of consuming music. Beyond that, the survey seeks to find out how students' decide which device to use for different situations (i.e., do they use the same device to listen to music while they are working out as they do when studying?).

Finally, the survey concludes with questions about Americana Music, and whether students were aware of the genre before attending Goshen College. The questionnaire asks the students how they would describe Americana as they currently understand it, as well as ranking specific artists in order of relevance to the genre.

Helena A. Neufeld

*Exhuming a Poet: Federico Garcia Lorca and Spain's Continued Healing*

Department of Bible and Religion

Advisor: Professor Jo-Ann A. Brant Ph.D.

Ezra F. Ocubamichael

*Technical Challenges and Importance of Developing a Mobile App for Goshen College's award winning WGCS 91.1FM The Globe Radio*

Department of Informatics

Advisor: Professor Kent Palmer Ph.D.

It is an exciting coincidence that the development of mobile app for the first Goshen College's WGCS91.1FM The Globe radio coincides with its highest Trifecta award since its foundation in 1958. This research paper details two fundamental documents in the process of the development of the Globe radio mobile app. These two documents are the Software Requirements Specification (SRS) document that specifies what the app will do and the Design Specification Document (DSD) that specifies how the app will be built.

In these two documents the overall description of the radio app, specific requirements, system features, analysis models, interface design and customer requirement specifications, architectural aspect, detailed and construction designs are featured. The development of the app is currently almost in its final phase after successful testing. When the app is finished, which is expected to be completed by April 28, 2014, it will allow for the stations fans to conveniently interact with Globe Radio broadcast programs while on the go. Besides increasing visibility and accessibility of the station as compared with other college radio stations, the app is expected to enhance the social networking strategies of the Globe radio station.

Ezra F. Ocuamichael  
*Free Press and the Challenges of Securing Peace and Justice Based  
Good Governance in the Horn of Africa*  
Department of Communication  
Advisor: Professor Pat Lehman Ph.D.

Categorically, how much “Free” is “Free Press” is one of the most controversial concepts in the history of press in the world, where different countries have different standards of defining press freedom. The most important value of free press is its role of independent journalism in securing and building peace and social justice based development. Key research findings regarding media support and development confirm that there are strong relationships between freedom of press and development in Sub-Saharan African countries. This free press versus development is mainly a comparison between free press versus stability, transparency, strength of democracy, rule of law, accountability and control of corruption and other aspects of good governance.

This research paper examines the different challenges of press freedom in sub-Saharan African countries in general and countries in East Africa in particular using the different parameters based on the universally acceptable norms of the definition of free press.

Yesenia Y. Orellana  
*The Influence of Latino Religious Community Leaders on the Education of Latino  
Youth in North Central, Indiana*  
Center for Intercultural Teaching and Learning at Goshen College  
Department of Nursing  
Advisor: Professor Rubén P. Viramontez Anguiano Ph.D.

The purpose of this study is to highlight the role that Latino religious leaders have on the education of Latino youth in North Central, Indiana. A total of 10 individuals from different Latino nationalities and Christian religions were asked to participate in the study. The majority of the respondents had earned a higher education. The overarching methodology used was ethnographic methods. Through the use of grounded theory the goal was to explore the intersection between Latino leaders, the Latino families, the schools and the community. The authors served as active participants (Spradely, 1979). As part of the ethnography, the data collection methods also included semi-structured individual interviews. A theme analysis was conducted and thick descriptions or quotations were developed (Miles & Huberman, 1994). As Creswell (1998) suggested, the data was mined for clarity to gain more detail on patterns of themes that were significant. The results demonstrated that the religious leaders often encouraged every student at their place of congregation to pursue a higher education. Another important finding was

that the majority of respondents believed that there needed to be more Latino leaders involved with the local schools in North Central Indiana. Most of the leaders acknowledged that they were not as familiar with the educational system in their communities. This suggested that it is important to provide accurate information to families as well as to religious leaders who may have a positive influence on Latino youth and thus, can provide more accurate information. The findings from this study demonstrated that religious leaders can have a positive impact on Latino youth education and their families. Moreover, the study also demonstrates that continued partnership between faith based organizations and schools would benefit Latino's educational success.

Benjamin J. Pollitt  
*The Biomechanics of the Golf Swing in an Amateur and Elite Performer*  
Department of Kinesiology  
Advisor: Professor Jewel Lehman D.Ed.

The study compares the golf swing of an amateur performer (myself) and that of an elite performer (Rory McIlroy). I look into the biomechanical aspects of the golf swing and make stark comparisons between the two. My paper looks into statistics from both performers and compares them together, for example, I stated in the paper that McIlroy strikes the ball  $x$  yards and the amateur strikes it  $y$  yards, then comparing both results to the PGA driving distance statistics and estimated where the amateur performer ranks on the list, often finding that the amateur ranks much lower than that of an elite performer.

Emma J. Ruth  
*Pinecraft Community Preservation Project*  
Department of Sociology  
Advisor: Norman Kauffmann Ph.D.

Pinecraft is a predominantly Amish/Mennonite community in Sarasota, Florida. Many people from the Amish and Mennonite communities of the Northern U.S.A. and Canada have seasonally gathered within this quaint little village since the 1920's. Recently representatives of the Pinecraft community initiated discussions with Sarasota County staff regarding possible approaches to addressing a number of concerns and issues within the community. Out of these discussions, the need to develop a community master plan was identified. It was agreed that this plan could best be developed through the creation of a public/private partnership between Sarasota County and the Pinecraft community. The community would be responsible for securing the resources and expertise necessary to produce the Plan and the County would act as a planning and technical resource in support of the effort. After gathering data that identified the scope of the project, county staff

encouraged the community to have leadership from individuals that would understand the culture of the Amish and Mennonite, therefore bringing better representation from the community in developing a customized master plan. After months of research and community meetings, a plan of twenty-five proposals from the community has been finalized and sent to the county, in hope to achieve three main objectives:

- Preserve and enhance the uniqueness of Pinecraft
- Improve safety within the community
- Improve communication with the County of Sarasota

Hannah A. Sauder and Nicholas G. Peebles  
*Perspectives on the Hiring Policy Regarding LGBTQ Employment at Goshen College*  
Department of Communication  
Advisor: Professor Duane Stoltzfus Ph.D.

The purpose of this study is to gauge the perspectives of the current hiring policy at Goshen College. In lieu of the current discussions taking place on the campuses of other Mennonite Institutions affiliated with Mennonite Church USA, this study is intended to gauge the satisfaction rate of the current policy. This study will look at the views of the current students, faculty, and staff at Goshen College. The study will consist of two surveys. The student survey (conducted by Nicholas Peebles) will consist of questions regarding satisfaction of the current policy and the changes in perspectives over the course of their time at Goshen College. The faculty and staff survey (conducted by Hannah Sauder) will consist of questions regarding satisfaction of the current policy and the religious affiliation of the sample. Both surveys will be sent to a random sample of the specified demographics.

Peter R. Schrock  
*The Machiavelli Index: A Flawed Measurement of Voting Power*  
Maple Scholars Program  
Department of Mathematics  
Advisor: Professor David Housman Ph.D.

In a nine-person committee where every member has one vote and a majority, or five votes, is required to reach a consensus, five members would stand to increase their power by agreeing to form a bloc. By secretly voting before meeting as a whole committee, the five could come to a consensus by majority and then all agree to vote the same way in front of the full committee. Because the bloc effectively controls the committee, each member would have one fifth of the full committee's power, instead of the one ninth they would receive without the bloc. Three particularly Machiavellian members of the five could then theoretically form a bloc within the bloc of five and control the whole committee. This talk will discuss



the power dynamics of the United Nations Security Council as an example and then introduce a new method of measuring voting power.

Jessica K. Sprunger

*Influence and Skill: Integrating Found Materials and Imagery into Metalwork*

Department of Art

Advisor: Professor Kristi Glick MFA

This presentation will explore the concept of my senior art show. Much of the work is based on the vocations of my family members, particularly my grandparents. I will explore how I translated my grandfather's job as a carpenter and my grandmother's love for quilting. These combine to create the visual elements that are represented as buttons within this body of work. I will highlight my process as an artist, showing how I use my skills to honor the trades of my family via my abilities as a metal-smith."

Julianna R. Tennefoss

*Case Study on the effects of tutoring a first-grade English learner*

Department of Education

Advisor: Professor Karen Yoder EDD

Nearly sixty percent of students at Chamberlin Elementary School in Goshen, Indiana are English Language Learners. In first grade, most students are learning to speak two languages and to read and write in English, causing many to fall behind during this pivotal year of education. This case study focuses on the effect of individual tutoring sessions on a first-grade English learner's reading motivation, reading fluency, and writing development. The study was conducted over an 11-week period including fifteen 30-minute tutoring sessions. The findings lead to effective implications for regular elementary classroom teachers and others who may be working with English learners.

Elizabeth L. Wittrig

*A Partial Peace: Forgiveness and the South African Truth  
and Reconciliation Commission*

Department of Peace Justice and Conflict Studies

Advisor: Professor Joe C. Liechty Ph.D.

After Apartheid ended, the South African parliament created the Truth and Reconciliation Commission (TRC) in order to construct a framework for national healing. Religious and political actors in South Africa believed that the commission's reconciliation work required more than secular resources. The TRC integrated religious and political concepts of justice through utilizing Christian actors,

institutions, and spiritual rituals. When the TRC encouraged citizens to practice a Christian ethic of forgiveness, controversy arose within the commission, South African society and the world: forcing individuals to analyze the virtues and limitations of using religion to build peace following ethno-religious violence. This paper synthesizes prominent secondary sources on the South African Truth and Reconciliation Commission through reviewing common critiques of how the truth commission utilized forgiveness in juxtaposition with an even stronger argument for how religious conflict resolution proved essential for implementing a partial peace.

Jacob S. Yoder

*Aligning Ideals with Institutional Structures: International Voluntary Services and the Transformative Power of People-to-People Development in Vietnam, 1957-1971*

Department of History

Advisor: Professor John D. Roth

In 1953, leaders from Mennonite, Brethren, and Quaker organizations founded International Voluntary Services as a nonsectarian development agency committed to combatting hunger, poverty, disease, and illiteracy in what was known at the time as the “Third World.” From the beginning, International Voluntary Services (IVS) employed a model of “people-to-people” development that required young idealistic Americans to live culturally integrated lives among the people they served. In war-torn Vietnam, however, this strategy had an unforeseen consequence: new worldviews shaped by intimate interaction with Vietnamese culture and real Vietnamese people spurred volunteers to respond vociferously to the proxy war initiated by the United States and their own organization’s role in it. Volunteers demanded that IVS restructure its institutional priorities to better align with its development ideals. The story of IVS in Vietnam, thus, illustrates the power of people-to-people development to transform volunteers and institutions alike for the good of the people they work to serve.

Joshua A. Yoder

*Fire Decreases Ant Densities in an Ant-Acacia Mutualism*

Department of Biological Sciences

Advisor: Ryan Sensenig Ph.D.

Fire and herbivory are drivers of savanna plant communities that profoundly impact vegetation composition and diversity. Their independent effects as regulators of the coexistence between trees and grasses in savannas are well documented. However, little is known about how fire and browsing effects combine to disrupt or promote mutualistic interactions. Mutualisms are largely responsible for terrestrial biodiversity and ecosystem function, and their loss can impact a wide

array of ecological processes. Environmental perturbation, resource limitation, herbivory levels, and fire can all influence mutualistic investment and affect ant-plant mutualism strength and stability. We examined the combined effects of herbivory and fire in shaping the ant-plant defensive mutualism between the whistling-thorn *Acacia (Senegalia) drepanolobium* and its symbiotic guild of ants. Our study was carried out in a semi-arid savanna in Laikipia County, Kenya at the Mpala Research Centre. We measured the density of acacia ants in burned and unburned patches, between areas excluding large herbivores and areas permitting their activity. Based on this evidence, we are confident that fire acts to decrease densities of ants on acacia trees, while herbivory tends to increase ant numbers. Understanding the complex interplay between these two factors may help inform decisions of wildlife and rangeland managers.