Kale Growth in Polarized Light

Cassidy Anderson

Faculty Mentor: Kristen Mudrack

Throughout nature, carbohydrates and proteins are observed to have respectively homogenous chirality; carbohydrates are known to exist in a right-hand (D) configuration and proteins in a left-hand (L) state. Previous studies have shown that plants exhibit polarization effects when grown in varying types of polarized light. It is hypothesized that our galaxy has a magnetic spin and magnetic orientation, which contributes to the homogeneous, naturally occurring chirality of proteins and carbohydrates. This study aims to examine both the phenotypic and chemical polarization effects of four different types of light on Brassica napus ssp. Pabularia. Altering the direction of light to which B. napus is exposed may alter the configuration of carbohydrates that it produces via photosynthesis. Both differences in the appearance of the plants and in the chirality of the sugars was explored. Carbohydrates are extracted from the natural product through an ethanolic homogenization step. The resulting combination of glucose, sucrose, and fructose solution are then separated using HPLC with a size-exclusion column. After separation and recollection, the carbohydrates are individually analyzed on a polarimeter to determine chirality of the sugars. Our results indicate that B. napus thrives best under the left-handed circularly polarized light variable. It is expected that the chirality of the sugars produced will follow the trend of the control and linear having only D sugars and either the left or right-handed circular possibly producing L-sugars.

Standing Before God: The Jewish Ethic of Responsibility

Nathan Cachiaras

Faculty Mentor: Miriam Perkins

In this essay, I pursue a description of the Jewish concept of human responsibility, ontologically granted and covenantally fulfilled. This is a primary means by which the Jewish faith responds to a world rife with chaos, injustice, and suffering. First, I characterize broadly the most relevant foundational aspects of Jewish faith and mind that contribute to "Jewish Identity." Then, I consider the story of Abraham "standing before God" in Genesis 18:16-33 as paradigmatic for this concept of human responsibility. Third, I explore three axiomatic grounds of belief that are necessary for analyzing this story in full, guided by three luminous and contemporary Jewish voices. These grounds of belief are titled "Creation as Freedom" with R. Abraham Joshua Heschel, "Suffering as Experience" with Jon Levenson, and "Freedom as Responsibility" with R. Jonathan Sacks. Fourth, I revisit the story of Abraham in order to complete its analysis before offering exhortations from each author for courageous and creative praxis of human responsibility in the face of the experience of suffering. As a Christian writer, I take up this task with humility and conclude the essay by yearning to name part of the profound wisdom imparted to my own Christian tradition by Jewish faith and practice. Taken together, this points toward the possibility and even necessity of interfaith cooperation for the sake of God's salvific intent toward all the world as manifested in the community of God's people.

Kale Growth in Polarized Light

Jessica Cannon

Faculty Mentor: Kristen Mudrack

Throughout nature, carbohydrates and proteins are observed to have respectively homogenous chirality; carbohydrates are known to exist in a right-hand (D) configuration and proteins in a left-hand (L) state. Previous studies have shown that plants exhibit polarization effects when grown in varying types of polarized light. It is hypothesized that our galaxy has a magnetic spin and magnetic orientation, which contributes to the homogeneous, naturally occurring chirality of proteins and carbohydrates. This study aims to examine both the phenotypic and chemical polarization effects of four different types of light on *Brassica napus* ssp. *Pabularia*. Altering the direction of light to which *B. napus* is exposed may alter the configuration of carbohydrates that it produces via photosynthesis. Both differences in the appearance of the plants and in the chirality of the sugars was explored. Carbohydrates are extracted from the natural product through an ethanolic homogenization step. The resulting combination of glucose, sucrose, and fructose solution are then separated using HPLC with a size-exclusion column. After separation and recollection, the carbohydrates are individually analyzed on a polarimeter to determine chirality of the sugars. Our results indicate that *B. napus* thrives best under the left-handed circularly polarized light variable. It is expected that the chirality of the sugars produced will follow the trend of the control and linear having only D sugars and either the left or right-handed circular possibly producing L-sugars.

The Sustainability of Theatre in Higher Education (Colleges & Universities)

Andrea Coggins

Faculty Mentor: Richard Major and Todd Edmonson

Theatre has long existed before the development of modern society, originating from primitive times, Ancient Greece, the Elizabethan Era, and so forth, proving its resilience in an ever-changing fast-paced society. However, educational theatre programs are declining at a rapid rate, causing some college and university programs to shut down. This is due in part to major stigma surrounding those studying the arts, as they are often told that their program of study is often worthless and holds no real value in today's job market. Theatre, however, provides multiple benefits for those involved, such as better, teamwork, and multiple hands-on activities (such as sewing, carpentry, etc.) that they would not learn in a classroom. This research looks at how stigma has greatly impacted the study of theatre, societies have greatly benefited from theatre, and what educational institutions can do in order to keep the curtains from closing on their theatre programs.

Importance of a Weight-Gain-First Strategy when Recovering from Anorexia Nervosa

Sarah Douglas

Faculty Mentors: Lori Mills and Todd Edmondson

This research paper chronicles the imperative need for people recovering from anorexia nervosa to gain weight quickly. Many treatment methods wait for the patient to heal the mind before putting on weight, but malnutrition disallows correct brain function. Therefore, without significant weight gain, healing of the mind simply is not possible. Additionally, the weight gain cannot be restricted nor predicted by a scale. Bodies all work differently, especially bodies that were starved for extended periods of time. The research contained in this paper argues for trusting the body to gain the necessary weight, uninterrupted by doctors' scales or charts. The paper starts by defining anorexia nervosa and corrects misconceptions. It also details the many physical effects detrimental to the patient's health, defends why weight recovery should be the primary focus, describes old approaches to weight restoration, and warns of the challenges that weight gain will bring. The paper engages a wide range of research to advance for fast and unrestricted weight gain.

Key words: anorexia nervosa, weight gain, recovery, malnutrition, misconceptions

Finding the Axis of Chain-Like Molecules in Molecular Simulations

Tilly Erwin

Faulty Mentor: Nathaniel Wentzel

Various simulation techniques are available to help us connect molecule behavior to physical theories and experimental results of aggregate behavior like phase transitions in molecular systems. One important technique is molecular dynamics simulations, which provide microscopic insights that sometimes cannot be observed directly in experiments. These simulations can generate enormous amounts of data, which must be analyzed carefully to glean useful information. For studying aggregate behavior in a system we can develop various kinds of order parameters based on microscopic factors that can then be averaged to understand the overall system state. Phases and phase transitions in short, chain-like molecules can be characterized by behavior of order parameters such as spatial orientation of each molecule's long axis, rotation of each molecule about its axis, and bending of each molecule relative to that axis. In this presentation we will discuss mathematically defining the orientation of the axis of a short chain-like molecule in simulation. We will show both the mathematics behind this technique and preliminary results in applying it to simulated data.

World Cup and FIFA Rankings

Luis Esteban de la Torre Gonzalez

Faculty Mentor: David Campbell

FIFA Rankings provide an estimate of which National Teams are better than others. While this is a good estimate, the team ranked #1 is not always the team that ends up winning the World Cup. Econometric Principles are used to analyze and attempt to explain behaviors based on related factors. These analyses are more often made on population factors related to the country's Economy. This research uses Econometric analysis to show what internal and external factors play a role and how impactful they are to determine the performance of National teams in the World Cup. This research also uses the Econometric analysis to specifically see how accurate FIFA Rankings are to estimate the World Cup winner, as well as each team's performance in the World Cup.

Student-Teacher Relationships: Do Positive Relationships Impact Career Choice?

Haley Greenwell

Faculty Mentor: Angela Hilton-Prillhart

Student-teacher relationships are influential on student performance, in part, due to the amount of time students spend in a school setting. In order to study the long-term impact of this relationship on students, the following question was asked: How do student-teacher relationships affect the career choice of students later in life? Researchers have attempted to define this relationship, but have encountered some challenges. While some emphasize the student's perspective (Vervoort, Doumen, and Verschueren, 2015), others emphasize the relationship as a working alliance (Toste, Heath, Connor, and Peng, 2015). Another factor thought to determine positive student-teacher relationships is similarity- gender, race, backgrounds, etc. (Gehlbach, Brinkworth, King, Hsu, Mclntyre, and Rogers, 2016). According to Allen (2012) qualities of teacher interactions with students predicted student performance on end-of-year standardized achievement tests. While there may be disagreement on what factors are most influential, many researchers agree that student- teacher relationships have some sort of impact on student performance (Gehlbach, Brinkworth, King, Hsu, Mclntyre, and Rogers, 2016; Toste, Heath, Connor, and Peng, 2015; Vervoort, Doumen, and Verschueren, 2015) . In the current study an online survey examining the impact of educators on students was created and shared through social media. The survey had 104 respondents and the majority of respondents indicated teachers that left the most impact on their lives fit the category of a caring teacher. A caring teacher, as defined by this survey, includes spending extra time aiding in the education of the students, taking interest in students, and pushing students to achieve their best work. Results from the current study did not indicate the student-teacher relationship had an impact on later career decisions. Limitations of the study and implications for further research are also discussed.

The Impact of Childhood Sexual Abuse on the Self-Image of College Students

Rebecca Pierce-Hale

Faculty Mentor: Christine Browning

The current study looked into responses provided through an anonymous survey, which contained 10 questions. The survey investigated participant history of childhood sexual abuse and the impact of sexual abuse on current self-image. The researcher used interrater agreement with mentor and found there were some similarities between participant self-image when hanging out with friends, when being the center of attention, as well as when being alone.

A Comparison of the U.S. and China in sustainable consumer food practices

Sue Harrod

Faculty Mentor: Hongyou Lu

As referenced in the title, this research project seeks to compare cultural and societal variances when it comes to consumer food practices, and whether those food practices are sustainable. We will conduct this study by referencing literature and also firsthand accounts of those who have witnessed certain food practices in both the U.S. and China. We want to highlight sustainability in the aspects of both food consumption, whether that be the rapid increase of meat consumption or the discarding of safe, but visually ugly vegetables and fruits, to the waste left behind due to extensive use of plastic, paper, and Styrofoam. By gathering information, we aim to communicate to our audience the differences and similarities between the two countries, as well as offer sustainable food practice options. Recommendations on sustainable food practices will be made specifically towards three levels: government policies, smaller communities, and individuals. After this project is presented, audiences will be both aware of the massive and relevant issue at hand and challenged to change the part they play in sustainability.

The Depths of Water Sustainability: How Tennessee's Residential Sector Can Reduce Water Consumption

Levi Holloway

Faculty Mentor: Hongyou Lu

According to studies, by engineers Arjen Hoekstra and Mesfin Mekonnen at the University of Twente in the Netherlands, "the U.S. consumed the highest annual totals: 1,207 billion, 1,182 billion and 1,053 billion cubic meters, respectively, followed by Brazil at 482 billion."[i] Water sustainability is not seen as an issue since water is a renewable resource, but recently local rivers, lakes, and aquifers have been drying up do to overuse. Climate change is also changing rain patterns and could lead to less rain where water sources are located. Focusing on David Groenfeldt's argument for "promoting ethics awareness and the application of ethic analysis to water decisions."[ii] I will show how making water decisions that are ethical, by considering how the environment will be impacted when making decisions, will help restore the natural water sources. Everyone in the United States can help reduce water usage by analyzing what they are using water for and, if possible, how can they reduce water usage and still maintain that activity. I am going to show how Tennessee's residential sector can reduce water consumption by changing their ethics, behavior, and using new technologies to help sustain local water resources.

[1] Mark Fischetti." How Much Water Do Nations Consume?" scientificamerican.com. https://www.scientificamerican.com/article/graphic-science-how-much-water-nations-consume/

[1] David Groenfeldt, *Water ethics: a values approach to solving the water crisis*. n.p.: Abingdon: Earthscan from Routledge, 2013

Women Mystic Reformers: Making Space for Non-traditional Voices in the Church

Abigail Hook

Faculty Mentor: Lee Blackburn

Though much of church history is overgrown with the authoritative voices of male theologians, an accurate historical understanding of the church, theology, and society is quite incomplete without proper attention to the female voices also at work throughout history. This essay attempts to devote such attention to the voices of two medieval women mystics: Catherine of Siena and Mechthild of Magdeburg. Their voices and the reception of them by the church are bound up in matters of politics, theology, and authority. By engaging with some of their most prevalent texts (*The Dialogue* and *The Flowing Light of the Godhead*), this paper seeks to understand the ways in which Catherine and Mechthild, in their unique styles and settings, boldly call for reform of the church. This naturally leads to the question of authority—what qualifies a voice to demand such reform? This project ultimately asks how the bold, non-traditional voices of Catherine and Mechthild forge space for the embrace of marginalized voices across Christian traditions today.

Data Structures in Game Design

Ryan Kelly

Faculty Mentor: Namyoun Choi

Data structures describe how data is formatted and stored inside of a computer program. Understanding data structures is critical for all computer programmers to create efficient programs. This project will study how data structures such as stacks, queues, linked lists, and arrays can be implemented in game design. The goal of this project is to create a game similar to Tetris using these data structures. The reason for this is that Tetris presents a unique challenge in creating data structures capable of correctly moving and deleting blocks. By overcoming these challenges, this project will create a better understanding of data structures and how they are used for designing games.

A Medieval Counterfeit: Restoration of Virginity through the Means of Medicine and Theology

Mitchell Marquez

Faculty Mentor: Kayla Walker Edin

During the thirteenth and fourteenth centuries, a woman's virginity* defined her role in society and determined the trajectory of her life. However, what would become of a woman who no longer possessed this "purity" and was not protected by a marriage? Due to the physical and spiritual restrictions that were placed on a women's role, impure women looked for alternatives to regain their virginity and through that their purity. Women had two options when it came to restoring their virginity: they could seek a physical route, which would help them fake their virginity using medicine and allow for them to pass as "virgins" when they married, or they could seek a spiritual route, where they would gain a spiritual virginity restoration. Medically, procedures could be done to physically restore the hymen. Recipes that included beeswax, gravel, and nutmeg offered women ways to regain (or fake) their virginity. In the context of the Church, if "purity" was lost, it could be regained with the assistance of a priest. If a woman's virginity was lost, she would have to resort to finding a way to regain this virginity or accept her role as "impure woman", leading her to become a pariah within her community and losing what monetary value she previously possessed. A woman's virginity was not hers to give, but rather a possession that belonged to her father or her husband: in other words, a commodity. If a woman were found to be impure, then shame would come upon not only her, but also her family name. This would lead to women guarding, faking, or fighting to reclaim their virginal status, either for the purpose of protecting the family name, retaining her social status, being accepted within the church, or regaining her monetary value.

*I am keeping in play two definitions from the era: the medical community's definition as an intact hymen and the Church's definition as both a physical and spiritual state that could be restored by way of penance, overseen by one's priest and sometimes involving forcible abortion.

Keywords: virginity restoration, medieval, maidenhood, purity restoration, chastity

Against a Belligerent Biblical Ethic: Exploring the Redaction Layer of Joshua 2, 7, and 9

Daniel Morton

Faculty Mentor: Adam Bean

The so-called “conquest narrative” of Joshua 1-12 is one of the most disturbing passages in the entire Hebrew Bible. In this section, the Israelites embark on a series of invasions where they are said to destroy all the people and animals of each town – most famously at Jericho. Worse yet, it is YHWH who is said to command the Israelites to commit these atrocities. In recent scholarly literature, L. Daniel Hawk (2008) has identified a redaction layer in Joshua 2, 7, and 9, that undercuts the imperialist triumphalism of the other stories in this narrative. Using Hawk’s work as a baseline, the present essay aims to provide a fuller exegesis of these chapters through sociocultural background study and hermeneutical reflection.

SFP or Vacancy? The Relationship between Chapel Attendance and Retention at Milligan

Jonathan Russell

Faculty Mentor: David Campbell

Is an individual's lack of participation in Milligan College's Spiritual Formation Program correlated to the individual's likelihood to leave Milligan College before graduation? My research will econometrically analyze data sets from Milligan College's Spiritual Formation Program and Milligan College's attrition statistics, from students primarily in the first and second semesters. Through gathering and plotting Spiritual Formation Points of past Freshman classes I seek to perform regression analysis on the attendance among various student demographics (athletic teams, GPA, scholarship) and the Spiritual Formation Program credits within those demographics. There also presents the opportunity of future analysis of Spiritual Formation Program credits beyond freshman year.

This research question became apparent after overhearing freshman students on my athletic team discuss their lack of chapel attendance after the first semester. Most of these students in the discussion had good GPAs, but a majority of them chose to leave after the first semester. I realized their happiness with their experience at the college was directly influencing their involvement in the spiritual formation program. Thus, SFP was a numerical representation of the students perceived happiness and SFP could be used to understand the student's happiness and integration with the values of the college.

My hypothesis stems from there being no true material reward to students for achieving Spiritual Formation Points during their freshman year in Milligan College's semi-discretionary chapel structure. The material reward from SFP is the ability to receive one's diploma and fully graduate. The value then for a freshman student to participate in the SFP is immaterial. A freshman student may have high academic goals and may decide to participate in the SFP to lessen the hours required in future, more challenging academic years. A freshman may be involved in a community of students who together chose to participate in the SFP events. Or, a freshman may have a sincere enjoyment of the events in the SFP and find worth in the value they present to their personal spiritual development. In either of these three scenarios, the student participates to the SFP because their personal values are parralell with the core values of the institution: scholarship, community, and faith.

Relationships between Testosterone in Collegiate Male Soccer Players and Bone Density and Physical Performance

Keila Trevino

Faculty Mentor: John Simonsen

Knowledge of collegiate soccer players' physiological status can aid coaches by providing data which helps establish a basis for training programs. Significant positive correlations have shown between testosterone levels and athletic performance in young male soccer players. Testosterone levels have also been shown to be lower in male endurance athletes. Testosterone levels in male athlete have been shown to be related to body mineral density (BMD) and, it is assumed, bone strength as well as other variables. My proposal is to determine: 1) whether testosterone levels in collegiate male soccer players is different than age-matched, non-athletic controls. 2) whether testosterone levels have influenced BMD in these athletes. And 3) whether there a relationship between testosterone levels and strength/power variables such as counter movement jumps.

Keywords*:* Testosterone, Bone Density, Endurance, College, Soccer, Athlete

Alternative Timeout Procedure for PCIT

Cleo Waite

Faculty Mentor: John Paul Abner

Parent-Child Interaction Therapy is an evidence-based treatment that has been found effective to treat both primary and secondary behavior problems (Schuhmann, Foote, Eyberg, Boggs, & Algina, 1998, Chaffin, Funderburk, Bard, Valle, & Gurwitch, 2011). PCIT has two separate phases, Child Directed Interaction and Parent Directed Interaction. Child Directed Interaction teaches parents play skills that enhance the relationship between the parent and child, while the Parent Directed Interaction phase teaches effective behavioral discipline strategies. During the second phase, Parent Directed Interaction, PCIT uses a timeout as part of its discipline sequence. The typical sequence involves a timeout chair and if the child prematurely escapes they are sent to a back up room. In order for the time out chair to be successful, the child must stay in the chair until it is time to get up. It is hypothesized that a visual boundary will help the child engage in premature escaping. A single participant case study approach was used to examine whether a mat instead of the chair would be an effective technique and if it encouraged more time out compliance. A mat was designed specifically for the timeout procedure that has raised edges along all sides of the mat. Plus the mat is just large enough for the child to sit in will also help discourage "chair acrobatics", which is when a child engages in a significant amount of motor activity which can sometimes results in a child accidentally getting off the chair. It is hypothesized that use of a mat with a visually distinct raised border will increase compliance to staying in timeout and decrease timeout escape by the child. A five-year-old child was recruited for the study that had clinically elevated scores on the Eyberg Child Behavior Inventory (Eyberg & Pincus 1998). Therapists used the PCIT protocol outlined in the current Parent Child interaction Therapy protocol (Eyberg & Funderburk, 2013) Each session the child was observed for five minutes using the Dyadic Parent Child Interaction Coding System and the parent completed the ECBI. Researchers will compare the number of child premature timeout exits with archival data. Researchers will also compare ECBI and DPICs data to archival averages. Researchers will also engage in a qualitative evaluation of how the child reacts to the mat. Researchers hope to provide pilot evidence that changing the timeout environment may encourage compliance and decrease need for backup interventions.

Medical Illustration: From the Roman Empire to the Digital Revolution

Caroline Walker

Faculty Mentor: Brian Eisenback

The progression of medical illustration will be shown by original artwork in the styles of the four eras, Galenistic Theories, Renaissance Refinement, Doctors as Illustrators, and the current Digital Revolution, and will be accompanied by a research essay.

La pena de los paises

Emma Warax

Faculty Mentor: Allysha Martin

La historia escrita de la economía está llena de condiciones en constante cambio con muchos depresiones y recesiones. Los historiadores se creen que todos los 195 países que existen lidian con estas inflaciones y deflaciones en una manera diferente según la edad y la historia del país, pero esto podría no ser cierto. Al analizar países con edades variados y previos crisis económicas, hay un patrón que todos siguen. Cada país experimenta las cinco etapas de dolor, una teoría creada por Katherine Kubler-Ross, una psiquiatra pionera, en la que ella demuestra cómo la gente lidia con el dolor. Esta teoría fue aplicada a Serbia por Ildiko Erdei, un profesor de etnología y antropología a la Universidad del Belgrado, cuando el país experimentó una recesión económica en 2009. Erdei descubrió que los países, o al menos Serbia, tendían a experimentar las cinco etapas de dolor en el orden correcto. Mi investigación trata de descubrir cómo Venezuela experimenta las cinco etapas de dolor desde la perspectiva de los colapsos económicos modernos. El ensayo trata de hallar cómo estas etapas influyen las políticas económicas y extranjeras y tendencias políticas en esto país. La crisis económica evaluado es la crisis económica actual en Venezuela que empezó en 2012.

All 195 countries that exist today are believed by historians to deal with economic inflations and deflations differently depending on the age and history of the country, but that might not be true. Analyzing countries with varying age and previous economic crises there is a pattern that all follow: every country experiences the five stages of grief, a theory by Katherine Kubler-Ross, a pioneering psychiatrist, in which she demonstrates how people deal with grief. This theory is then applied to Serbia by Ildiko Erdei, a professor of ethnology and anthropology at the University of Belgrade, when it experienced an economic downturn in 2009. Erdei found that countries, or at least Serbia, tended to experience all five stages of grief in order. Taking into consideration Kubler-Ross's theory and the practical applications by Erdei, my research seeks to explain how Venezuela experiences all five of the stages of grief during the present economic crisis that began in 2012. In my research I have found that each stage of grief has a governmental or civil agent, creating a dialogue between the two, eventually reaching the stage of acceptance together.

Applications of Micro Grids in Western Africa

Sam Wehner

Faculty Mentor: Hongyou Lu

Most modernized countries have had access to electricity for over a century, which has provided plenty of time for them to develop and adapt the technology to the changing needs of the modern world. These adaptations brought fourth solar electric power generation. Now in the 21st century in places like western Africa people still do not have access to electricity. Solar power will deliver this electricity with no carbon emissions and if adopted would put these developing nations ahead most modernized countries in terms of the amount of their population living off sustainable energy sources. This research will aim to show how solar technology in used in a microgrid can supply a clean and sustainable source of electricity to the developing communities. By understanding the characteristics of microgrids, and how it can be applied to locations with limited resources. This research will identify the key challenges and opportunities of microgrid in developing regions, such as West Africa.

Astrophotography

Shaun Whitson

Faculty Mentors: Alice Anthony and Nathaniel Wentzel

Images of space provide both scientific information and a look at beauty otherwise unseen by humans in nature. The human eye is limited both by its field of view as well as its ability to capture light. In order to overcome this, we can capture images using a CMOS or CCD sensor. Even these images must be stacked and edited using appropriate software to bring out the light showing scientifically important details or aesthetically interesting features. The images shown here were captured using a DSLR on a tripod as well as a telescope on a tracking mount. The image stacking and editing workflow is also shown, demonstrating basic techniques used by both scientists and amateur astronomers.

Jane Austen's legacy: 200 years of Austen's novels, characters, and happily ever afters

Kristen Williams

Faculty Mentor: Kayla Walker Edin

What is it about Jane Austen's novels that are still relevant today? Is it the characters or the love stories? Or is it the reminder of a simpler time that keeps modern audiences coming back for more? In my paper I interrogate the enduring legacy of Jane Austen and why modern audiences still read her novels today. Austen's wit and analysis of human character has lasted for over two hundred years and have made her novels last. Her characters have been used for countless adaptions all over the world. Austen's characters are also among the most prolific in literature. Austen also does not shy away from hard subjects, like elopement, which would have been taboo for her time period. In my paper, I compare adaptions of *Pride and Prejudice, Emma, and Persuasion* across mediums including films, blogs, and mini-series. I conclude that the je ne sais quoi around Austen is that even after two hundred years, modern audiences still watch adaptions of her novels and authors and movie producers still make adaptions of her novels that are reflective of their eras.

Keywords: Jane Austen, timeless, adaptions, legacy