



Volume 5



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The Navigator's Cover Art Contest Winner: **Jessica Lowe.**

About the Artwork

This artwork is titled *The Spirit of Park* by Fine Art student Jessica Lowe. It is an acrylic painting of Mackay Hall at Park University on a 11x14 wooden panel. The blue, green, and yellow colors of the piece were inspired by Van Gogh's artwork. The paint is layered in a unique style. Park University colors were incorporated into the clouds as they hover over the historic Mackay Hall, the focal point of campus. The meaning of the painting is to show the beauty of campus from a different point of view and inspire school spirit to Park students and staff.

From the Artist

"My main creative work includes ceramics, painting, and fibers. I explore all these mediums, which I love to utilize in my mixed media pieces. Art is a passion that I can create and share my life experiences with others. My creative expression is a profound reflection of my personal journey with hearing loss. I intertwine paint, ceramics, and fibers to create a mixed media that evokes an emotional experience for the viewer. I like to experiment and try new forms and textures. As an artist, I strive to celebrate the beauty, vulnerability, and resilience I have experienced in my journey with hearing loss through my thought-provoking creations. I use diverse materials and techniques, reflecting my passion for learning and my commitment to pushing the boundaries of traditional art forms." - **Jessica Lowe**

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About ParkWrites

ParkWrites is a university-wide Writing Across the Curriculum (WAC) program aimed at improving writing and writing instruction across the university. Writing Across the Curriculum is an educational approach used by a majority of universities to develop student learning about content (writing to learn) and to develop student learning about writing across all disciplines (learning to write). WAC programs increase student engagement and retention, critical thinking, effective communication across a range of audiences and purposes, and better prepare students for communicating in the workplace. These benefits are even greater for international students and students from underserved populations. ParkWrites consists of multiple initiatives including faculty development and support, a journal of excellent student writing called *The Navigator*, a student writing fellows program which places trained students in classes for extra writing support, and a curricular initiative, the Writing Intensive program. In addition to taking 3 required writing courses at Park, students also take at least 2 writing intensive courses both inside and outside their majors ensuring students get effective instruction in writing throughout their entire degree program.

Acknowledgements

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The Navigator editorial team would also like to thank the Writing Across the Curriculum committee for serving as the editorial reviewers of the Volume 5 writing submissions, as well as selecting the Best Writing Award. We are grateful for your service to the committee and our talented students!

Winner of *The Navigator's* Best Writing Award

Beyond the Game: Analyzing the Evolution of Men's and Women's NCAA Basketball Twitter Coverage during the 2023 and 2024 March Madness Seasons

Dorianna H. Braxton

Abstract

This study investigates the evolution of Twitter coverage surrounding men's and women's NCAA basketball tournaments during the 2023 and 2024 seasons. The analysis focuses on major shifts in media attention and public engagement related to the March Madness tournament. The research aims to uncover patterns in tweet volume, sentiment, and disparities in coverage and conversation between genders. The findings shed light on the changing landscape of social media representation of collegiate basketball, providing insights into potential factors influencing the differential attention given to men versus women tournaments. Understanding these dynamics contributes to a broader discussion about gender equity in sports media and further media coverage regarding the women's March Madness tournament.

Introduction

Every year, there are hundreds of thousand March Madness brackets that are created for the NCAA basketball tournament. Basketball fans around the country sit down and try to curate a winning bracket with various college teams. Before the 2023 March Madness basketball season, fans would typically only fill out brackets for the men's side. This was happening even though the women's and men's tournaments took place at the same time. Many individuals had no idea that the women's teams also participated in the tournament until recently. It was thought to be just the men's side participating in the large tournament. Times have changed drastically. People are tuning in and interacting more with the women's side of college basketball, which has never been seen before.

Women helped drive the conversation of the tournament in the 2024 March Madness season. Names such as Caitlin Clark, Angel Reese, and Dawn Staley are just a few of the women that have made an impact on the game and continue to do so. Basketball connoisseurs have spoken up about knowing more female players and their growing interest in that side of the game. This is a big deal, because usually female players are overlooked and not recognized as much for their accomplishments. Viewership increased for the tournament, showing numbers that have never been there before. For example, the 2024 South Carolina vs Iowa women's championship game drew an audience of 18.9 million viewers. For example, the men's Purdue vs. Uconn men's game

reached 14.82 million viewers. Comparatively, the 2018 Notre Dame vs. Mississippi State women's game drew an audience of 3.9 million viewers. This is a significant difference in viewership in just a short amount of time. It also should be noted that the women's games were not broadcasted on major networks like ABC until 2023 and was only available on ESPN platforms. The game is growing and there are more women's basketball fans than ever.

It is apparent that women's sports have had the talent but not the coverage. The 2024 March Madness season was unlike any other, but the reason for this growth remains unknown. Little is known on what made that season so different and where that shift is coming from. This led researchers to the questions: "How has the Twitter coverage surrounding men's and women's NCAA basketball tournaments shifted from 2023 to the 2024 March Madness seasons? What patterns in tweet volume, sentiment, and disparities in coverage and conversation between genders can be identified?". This study will focus on the online Twitter coverage and conversation of the March Madness tournament for both men's and women's basketball.

Literature Review

Women in sports have traditionally been overlooked and marginalized when compared to their male counterparts. When looking at sports coverage in the past there are significantly more stories covering male athletes than female athletes. In the past, journalists have been told not to cover women's sports because it wasn't as important as the men's stories. This creates disparities that place these genders on different levels. When women are covered in the media, oftentimes their performance is not the topic of discussion. Instead, it's about what's going on in their personal lives. Not only is the quantity of this coverage little to none, but the quality of these stories is also not adequate.

Federal law, known as Title IX, banned sex-based discrimination in educational programs receiving federal funding. It was passed in 1972 as a part of the Education Amendments. The Equity in Athletics Disclosure Act (EADA) was introduced in 1994, and requires colleges and universities to disclose information about their Title IX compliance in sports programs (Prachyl, et al, 2024). In the past, many schools had little to no athletic programs for women. Women's sports teams were not funded well and lacked good facilities to play their sport. Female participation in college sports was not encouraged to the same extent as their counterparts. After Title IX was in place it created better opportunities for female involvement in sports. There were more funding and proper facilities for them to do so as well. Title IX laid a foundation for female athletes and continues to pave the way for opportunities.

Looking at media coverage through the internet or social media adds to the conversation. The Twitter platform has allowed many individuals to join the conversation. "Twitter has provided sports broadcasters an additional avenue to reach their audience beyond the few minutes provided on a sportscast" (Hull, 2017). In Hull's research, they were trying to determine whether the broadcaster's gender or market size where they work has an impact on the amount of coverage given to women's sports. They found that "all 201 local sports broadcasters were devoted solely to women's sports (4.3%), with the vast majority discussing solely men's sports (77.3%)" (Hull, 2017). Although this is low when compared to major highlight shows, these numbers are still significantly higher. This revealed that the discussion on Twitter regarding female sports was slim to none. There is evidence that these athletes are being overlooked in the media significantly.

Men's sports are typically the main highlight and central focus of most broadcasting. Even when women are being discussed there are usually news tickers at the bottom of the screen casting news about male athletes (Messner, et al, 2010). Those news tickers take away from any important news and information that could potentially be shared about female athletes. There are major distracting components in place that take away the attention from female athletes. On major networks the disparities in coverage for women is noticeable and affects audience and viewer perceptions.

Going beyond media coverage, the incentives and perks of being a NCAA student athlete are comparatively different as well. During the March Madness championship tournament of 2021, Oregon women's basketball player Sedona Prince revealed how athletes were treated while involved in the tournament. Her TikTok video showed how the women's workout equipment was reduced to a rack of dumbbells, while the men had a full gym equipped with racks, weights, swag bags, food, and other amenities. Consequently, "CBS/Turner paid a combined \$850 million to carry the tournament," illustrating that the NCAA may not have money to provide both groups with all of the perks, but that is far from true (Diaz, 2021). Once this was made public it brought more attention to women's basketball and their treatment.

Methods

I conducted a content analysis of the conversation on Twitter. The researcher used a mixed-methods approach. This was important because finding both the qualitative and quantitative data would help find the shift. The sample population was limited to tweets sent by Twitter users engaged in the March Madness conversation between the dates of "Selection Sunday" and the championship tournament (March 12 - April 3, 2023 and March 17- April 8, 2024). To retrieve this data, an algorithm website named Keyhole was used. Keyhole organizes the sentiment, key themes, tweet volume, and coverage that are needed to analyze the data. Sentiment indicates whether a Twitter

post was positive, negative, or neutral. Key themes show if there is something in common among the posts. The tweet volume identifies if the posts are reaching the audience and how well it's doing. Finally, coverage will show if female players are being discussed. By retrieving this information, it could show if NCAA women's basketball athletes were being talked about, if the posts were reaching audiences, and how those audiences felt about the posts. Potential impressions also play a part in finding if these posts reached these audiences effectively. They are the estimated sum of followers from Twitter data. It also should be noted that a single user can deliver multiple impressions just from themselves. I wanted to determine the volume of discussions concerning NCAA women's basketball, evaluate audience participation, and discover public opinion regarding these topics and hashtags by utilizing these techniques.

Results

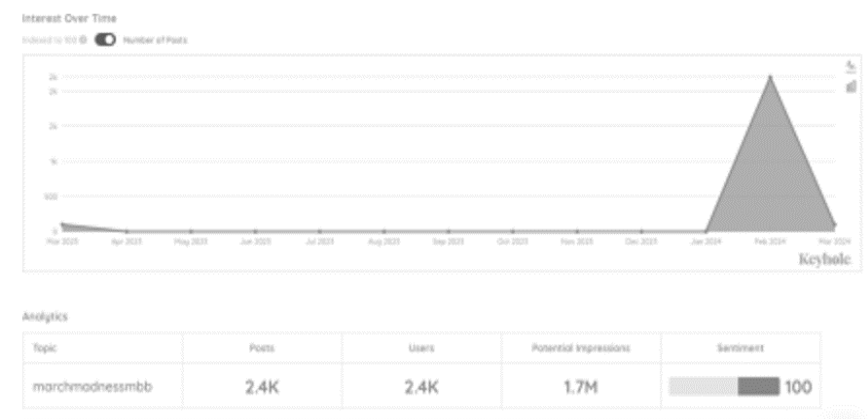


Figure 1

Represented is the timeline of March 12, 2023 to April 12, 2024 with the topic March Madness men's basketball. Accumulating 2.4K posts by 2.4K users on twitter. Potential impressions are to be seen at 1.7 million. The sentiment shows that there were 38% posts positive, 63% neutral, and 0% negative. As of March 2024, the number of posts for this topic were at 100 posts.

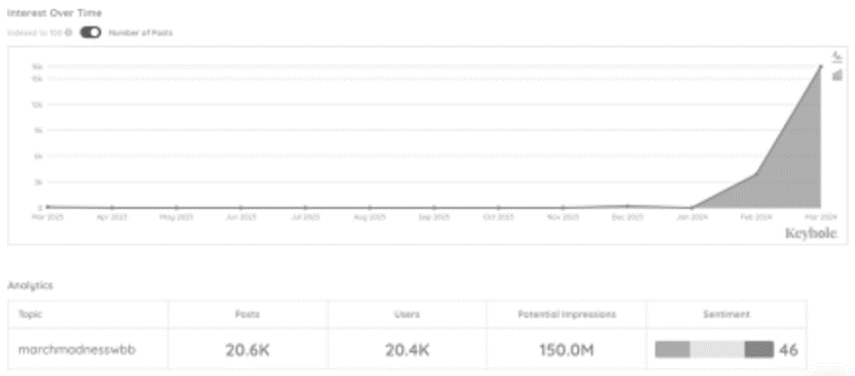


Figure 2

Represented is the timeline of March 12, 2023 to April 12, 2024 with the topic March Madness women's basketball, accumulating 20.6K posts by 20.4K users on Twitter. Potential impressions are to be seen at 150 million. The sentiment shows that there were 25% posts that were positive, 46% neutral, and 29% negative. As of March 2024, the number of posts for this topic were at 16,400 posts.

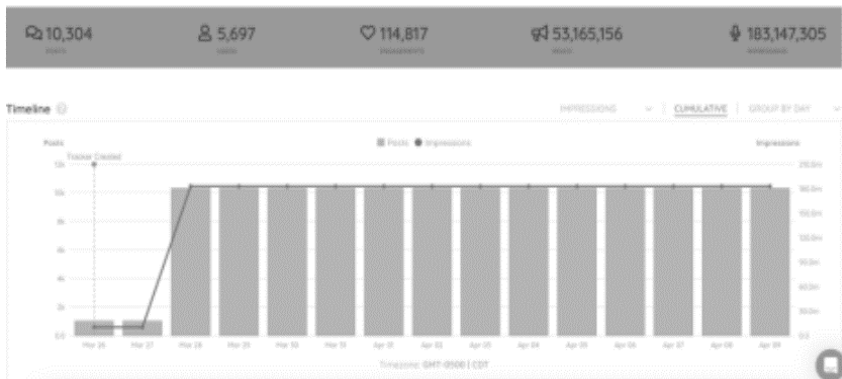


Figure 3

Represented is the timeline of March 26, 2024 to April 9, 2024 with the topic of March Madness, accumulating 10,304 posts by 5,607 users on Twitter. The potential impressions are to be seen at over 183 million impressions.

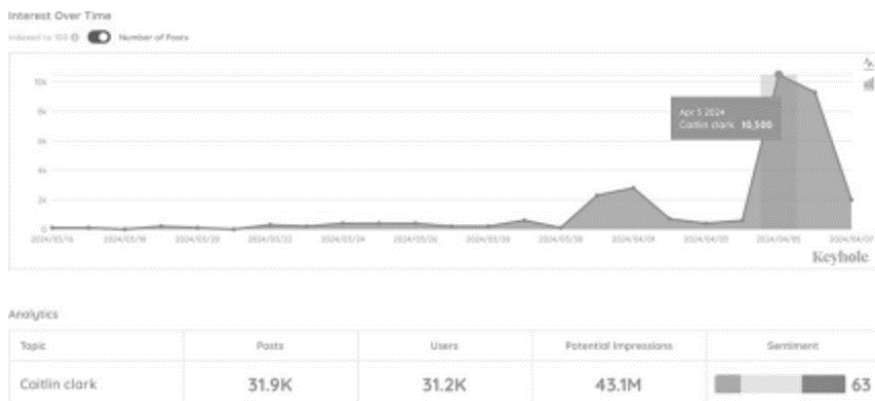


Figure 4

Represented is the timeline of March 16, 2024 to April 9, 2024 with the topic Caitlin Clark, accumulating 31.9K by 31.2K users on Twitter. Potential impressions should be seen at 43.1 million users. It also shows that April 5, 2024 alone there were 10,500 posts about the topic on Twitter.

Discussion

After examining the data, the results suggest that the individuals who are posting and seeing content regarding the women's side of March Madness basketball are creating more of a conversation over the women's side than the men's side this year, which has never been done before. The results showed the dramatic increase in posts and coverage on Twitter regarding the women's side. Content on Twitter revealed that there was a wide variety of engagement regarding the women that surpassed the men this year.

The start of Name, Image, and Like (NIL) deals for collegiate athletes have played a major part in this change due to the increased online presence of various content. In addition to providing players with an income, NIL deals have raised public awareness of women's sports and boosted media coverage. NIL partnerships have given female athletes more chances to demonstrate their abilities and receive praise equal with their male counterparts. Females have reached audiences that they have never encountered before with these platforms. This trend in coverage started in 2021 but has seen a rise in the previous 2023-2024 basketball season. The 2021 season sparked a debate and conversation regarding the equal treatment for the men's and women's athletes during the March Madness tournament. After this was uncovered, Twitter users were engaging more with female basketball athletes and it has drastically increased since then.

Limitations, Implications, and Future Research

There are a few limitations from this research that need to be addressed. For example, the hashtag “March Madness” has primarily been used to address only men’s basketball. This means all the data pulled for the topic might only address the men’s side. Also, for this topic the maximum amount of data pulled stopped at 9,303 posts, which limits the amount of data that could be received. Another limitation is that the Keyhole database’s sentiment is not always a hundred percent accurate. Some posts that were pulled were perceived as negative but were actually positive. Lastly, Twitter users would use the hashtag “March Madness Women’s Basketball” even when they were talking about men and vice versa, which makes it difficult to separate all of the posts from one another.

The goal of the research was to examine the media attention and coverage of March Madness and discover the changes within it. As evidenced by the data shown, there has been a drastic leap of media attention and coverage for the women’s teams competing in the tournament. Key figures, such as Caitlin Clark, were instrumental in pushing this discussion. Along with other well-known individuals, Clark, a former top player at the University of Iowa who was selected as the first overall draft by the Indiana Fever in the Women’s National Basketball Association (WNBA), has broken multiple college records and sparked a change in public perception. Their efforts have successfully brought women’s basketball the much-needed attention it deserves. There is work to be done to examine if the shift in March Madness was because of certain players. This can be analyzed by researching the 2025 March Madness season and its trends. Also examining the WNBA and seeing how the coverage is transitioned into the professional league. The WNBA currently has 12 teams with 144 roster spots. This means even if players are drafted, they do not officially have a spot on the team. The new media attention could spark conversations over expansion and more funding.

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Linguistic Choices in Election Speeches: Obama, Romney, and Harris

Dana Gloe

Political speeches, especially those tied to presidential elections, are important linguistic pieces often shaped by a speaker's purpose, audience, and context. The victory speech of Barack Obama (2012) and concession speeches of Mitt Romney (2012) and Kamala Harris (2024) not only highlight linguistic factors in triumph and defeat but also reflect personal and political standpoints. The digital linguistic tools Voyant Tools and Analyze My Writing take a text and provide data on the linguistic features inside. While these tools will produce many different outputs, this analysis focuses on pronoun usage, sentence length, word choice, and religious language. By analyzing these linguistic choices in Obama, Romney, and Harris's speeches, it becomes clear that their differences in pronoun usage, sentence structure, and overall focus reflect the purposes of victory and concession speeches but stand out in how they are shaped by their political contexts and intended audiences.

One similarity between Romney and Obama's speeches is their shared focus on gratitude and national unity. Despite their political differences, both Romney and Obama consistently thanked their supporters, family, and the American people. However, what was surprising was how it was conveyed and the clear different linguistic choices behind it. Obama used collective pronouns like "we" more frequently than Romney. Obama used "I" in his speech a total of 29 times and "we" 48 times. On the other hand, Romney used "I" more than "we," using the personal pronoun 18 times and the collective pronoun 11 times. This suggests that Obama is signaling a call for shared responsibility in the nation's future, as his job will continue to be with the American people. He directly connects himself with Americans in statements like "That's the future we hope for. That's the vision we share. That's where we need to go – forward. That's where we need to go" (Obama).

Romney's greater use of personal pronouns may be connected to the more personal, reflective nature of concession speeches themselves. Romney thanks his family, campaign team, and the American people who supported him, but he also signals the end of his personal journey in the election by stating, "I so wish — I so wish that I had been able to fulfill your hopes to lead the country in a different direction. But the nation chose another leader." (Romney). This means the idea of "we," the general American people, is not the primary focus or concern, but instead, bidding his farewell takes the front seat. In comparison, Kamala Harris's speech uses "we" 31 times and "I" 26 times, with considerably closer numbers than the other candidates. This could

suggest a balance between personal reflection and collective responsibility without being as polar as the other two speeches. For example, Romney seems to be looking for personal closure, but Harris's use of "we" signals that her journey is ongoing and that she is not stepping away from the political fight, and this can be seen through the use of the collective pronoun in contexts like "America's promise will always burn bright as long as we never give up and as long as we keep fighting" (Harris).

Another surprising factor relates to how Obama's speech had longer sentences, with Analyze My Writing putting his average sentence length at 20.17 words. Contrarily, Romney had shorter sentences, with the average length being 13.0. Obama's speech is longer, with a considerable 1,511 words over his opponent, which could account for the longer sentences. The length of sentences relating to the length of the piece is a hypothesis Harris' speech seems to support, with her speech coming in at 1,044 words less than Obama's and having a very similar average sentence length to Romney's, 14.7 words. However, Romney, Obama, and Harris have an average word length of ~ 4, meaning that, on average, their words contain four letters. The data pertaining to average word length is the only data with similar results in all the speeches, suggesting this is standard for these types of addresses.

In addition, Voyant creates a word cloud to showcase the top-frequency words in a text, as seen in Figure 1, Figure 2, and Figure 3. Obama had words such as "forward," "future," and "new" appear frequently (see Figure 1), reflecting his ongoing position in office. While Romney had words such as "wish," "believe," and "want" (see Figure 2), with personal reflections and acknowledgments of defeat being more prevalent in these words. For example, when he used the word "want," it was always when thanking someone, such as "I want to thank Paul Ryan" (Romney).

Kamala Harris's 2024 concession speech, though addressing her personal defeat, still showcases an interesting linguistic focus, different from Romney's. Her most used words included "fight," "thank," and "work," with "fight" appearing prominently at 18 usages (see Figure 3). This suggests a strong emphasis on determination and resilience, even in the face of defeat, which connects within the contexts these words appear: "And we will also wage it in quieter ways: [...] by always using our strength to lift people up, to fight for the dignity that all people deserve. The fight for our freedom will take hard work" (Harris). The use of "work," which is paired with the word "hard" five times throughout her speech, and "people" reflects her ongoing commitment to America, showing that, in this case, the purpose of her speech, which is to accept defeat, did not stop her from calling for change.

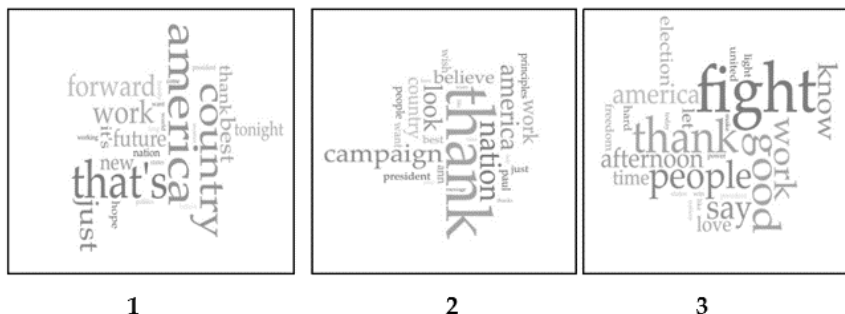


Fig 1: Obama's 25 Highest Words

Fig 2: Romney's 25 Highest Words

Fig. 3: Harris's 25 Highest Words

The word cloud also showed how Romney frequently uses exact names, such as “Paul,” his running mate, or “Ann,” his wife (see Figure 2), focusing to focus on individuals and thanking them for their sacrifices despite the defeat. While Obama does reference his vice president, wife, and two children during his speech, the vital difference is the lack of frequency, as his new concern becomes America as a whole. Harris’s speech, while acknowledging her personal loss, strikes a balance between expressing gratitude with words like “thank” and trying to inspire her supporters through terms like “fight” and “work” (see Figure 3). This linguistic choice does not fully align with Obama’s or Romney’s because it both reflects personal gratitude in defeat and a continued commitment to the American people.

Additionally, one factor not anticipated was the difference in religious language between the candidates. In Obama's speech, no religious comments were present until his closing statements, where he thanked God's grace and stated, "God bless you. God bless these United States," a common saying in American politics and beyond. His lack of religious affiliation in his victory speech could be for a broader, more inclusive appeal. The bipartisan tone may have served to address Americans across different backgrounds, beliefs, and identities, a common goal in the Democratic Party. However, Romney frequently used words such as "pray" (see Figure 2) and emphasized religious values for a considerable portion of his speech, saying, "We look to our pastors and priests and rabbis and counselors of all kinds to testify of the enduring principles upon which our society is built—honesty, charity, integrity and family." (Romney). These aspects align with his Republican demographic, often built on traditional religious values. Once again, Harris's speech finds a middle ground between the other two, this time regarding

religious affiliation. It has a similar ending to Obama's, where she states, "May God bless you. And may God bless the United States of America," but this is not the first appearance of God in her speech, with her addressing the importance of America's "loyalty to our conscience and to our God" in the middle of her speech as well (Harris).

However, in analyzing these three speeches, there is a similarity in tone that goes beyond religious beliefs: their clear use of Standard American English (SAE) and formal style reflect their attention to the occasion's formality. This comparison shows how linguistics allows us to examine the relationship between language and context, which is a key theme of this term. By examining Romney, Obama, and Kamala's speaking, I can see how linguistic choices are shaped by social situations, audience expectations, and the speaker's purpose. An Introduction to Language notes how social contexts shape language usage: "Social situations affect the details of language usage, but the core grammar remains intact, with a few superficial variations that lend a particular flavor to the speech" (Fromkin et al. 309). Their language's formality matches the event's gravity, a presidential concession and victory, where precision, respect, and eloquence are key. All three speakers maintain SAE with minimal regional or informal variations, which supports the idea that formal contexts preserve core grammatical standards.

Findings such as these lead to the key significance of these differences and similarities, which, when strictly looking at Obama and Romney's speeches, relate to the recurring idea of the contrasting purposes of the two speeches. Obama's speech, as a victory speech, was intended to inspire and unite the nation. In contrast, Romney's concession speech was meant to accept defeat while showing respect for the Democratic process gracefully. The linguistic construction of Obama's speech was full of optimism, unity, and aspirational goals, ultimately aligning with the typical goals of a victory speech. Romney's speech, in contrast, was more personal, focusing on gratitude and respect for his supporters, family, and campaign members, but still subtly acknowledged the importance of the future. Even though the length of speech and sentences, along with the pronoun usage, is affirmed, this notion constantly relates to the primary purpose of the speech, and with that, the audience being addressed. Surprisingly, Harris's speech was a middle ground between the two, carrying characteristics similar to those of both Obama and Romney's speeches. This approach is neither purely aspirational like Obama's nor entirely personal like Romney's. Still, it reflects a balancing act between acknowledging personal disappointment and empowering supporters to continue working toward shared goals.

My original hypothesis was similar to these ideas, believing that Obama's victory speech would use more optimistic and aspirational language, focusing on plans for the future. Conversely, I assumed that the concession

speeches by Romney and Harris would likely center around respectful but still more toned-down language, with an acknowledgment of the winner, lacking the topics of policy specifics or personal future aspirations as we might find in Obama's. As reflected in my findings, some of the data reaffirmed this expectation. Obama's speech did feature inclusive language with frequent uses of "we" and "America," reflecting that message of unity and optimism for the future. However, I was surprised to find that Romney's speech, while simpler and shorter, still carried a forward-looking view through his acknowledgment of the nation's challenges and the work of his supporters. Although he didn't discuss policy specifics or his personal future as Obama did, there was still an underlying tone of unity. Still, it was structured in a way that brought respect to the new president and encouraged his supporters to do the same. Harris's speech is where my hypothesis was incorrect, with her frequently speaking about the future of America through her constant use of words like "fight" and inspirational tone throughout; she even directly states "I will never give up the fight for a future where Americans can pursue their dreams, ambitions, and aspirations."

During my analysis process, I used the linguistic tools Voyant Tools and Analyze My Writing. While the linguistic data provided by the tools is valuable and addresses an abundance of linguistic factors, it cannot account for the tone of voice, pacing, or phonetic elements that also stand prevalent in the study. In this sense, the data-driven approach of the linguistic tools offers a foundation for understanding word choice and structural composition. Still, it lacks the analysis of how these words are delivered in real-time, meaning it falls short when looking at spoken texts. While this kind of data analysis complements the close reading I have learned in English studies, particularly in terms of focusing on word choice, meaning, and the subtext of a text, it can't capture the depth of the interpretive understanding. For example, the context of its delivery would be an especially prevalent factor when looking at texts intertwined with the political climate of the time. The linguistic data suggests patterns and tendencies but still leaves out personal delivery, pronunciation, context, or even something like audience reaction that one might find in close readings.

I believe the digital linguistic tools used, particularly Voyant Tools and Analyze My Writing, were very accurate in measuring the features of each speech I addressed, such as sentence length and frequency of specific words. These tools allowed me to notice patterns and compare them in each text, which would be challenging and time-consuming to do manually. They created a strong foundation for understanding the texts on a structural level. For instance, they helped me pinpoint Romney's focus on words like "thank"

and “nation” versus Obama’s use of “we” and “America.” While they could not draw exact conclusions for me, they still provided clear insights into each speaker’s priorities, strategies, and audience-driven language.

The linguistic analysis of Obama and Romney’s speeches reveals how their language is tailored to the unique demands of victory and concession speeches. Digital tools like Voyant Tools and Analyze My Writing provided valuable insights into patterns of pronoun usage, sentence length, and word choice, reflecting the speaker’s priorities. However, the data on Harris’s speech shows how she takes the middle ground, further demonstrating how concession speeches can blend personal reflection with plans for the future, proving part of my hypothesis incorrect. Ultimately, the findings show the role of language in political spaces and the complexity of how speeches are crafted to align with the speaker’s position and goals.

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Red Room Rhetoric

Haley Wathen

Mike Flanagan's adaptation of Shirley Jackson's *The Haunting of Hill House* aired in October of 2018 and immediately caught the attention of viewers at home. Flanagan has noted several times within interviews that he wanted to draw on the major themes of Jackson's beloved novel and "remix it" for modern audiences (Mirjalili). Flanagan's main diversion from the original material in his remix is the choice to follow the Crain family as they make Hill House their temporary residence. Keeping true to Jackson's themes of psychological horror, Flanagan focuses on the Crain children's psyches by displaying the ghosts of their childhood home and how they continue to be haunted in adulthood.

With this in mind, Flanagan leaned into the rhetoric of gothic horror to highlight the effects of childhood trauma on adult life. He did this by following the classic template of gothic horror, which portrays common fears and anxieties in a fantastical way (Ethridge). The fear and anxiety that accompanies trauma often manifests later in life in the form of mental illness (NIH). In regards to this, Flanagan uses rhetorical devices such as repetition, identification, metaphor, and paradox to portray the reality of ghostly traumas and how they may alter behavior.

Consequently, this produces a sense of fear, which is then used as a vessel to explore social issues and expand on their narrative with audiences as they cathartically live through these experiences, ultimately making this work an important expansion on mental health within society.

To begin, arguably the most prominent rhetorical devices that Flanagan uses within the series are repetition and identification. Both are simultaneously used throughout the series to establish themes. In regards to repetition, in the book *The Gothic Vision: Three Centuries of Horror, Terror and Fear*, author Dani Cavallaro states that gothic horror's use of repetition often materializes as ghosts, stating "The recursive appearance of ghosts often articulates both the return of the repressed and the longing to let it rest in peace." Cavallaro then goes on to distinguish this as a way to draw parallels and establish important themes, similar to how repetition is used within speeches and writing. Cavallaro's take on the way that repetition materializes within the genre speaks to Flanagan's methodology throughout the series for establishing themes for the audience.

For example, Flanagan drives home the theme of trauma with the repetition of each Crain family member's use of the red room. The recurring

red room is a prominent and ominous visual displayed throughout the series. The door is seemingly harmless and always locked. The red room only opens as a unique haven for each potential victim. This room is eventually described by the ghost of Nell Crain as the “stomach” of the house, as it digests their hopes and dreams, feeding on the trauma that is left behind. Each family member unknowingly spends time in the red room as a means to “escape” the reality of living in Hill House (Flanagan). Every episode focuses on each of the family member's experiences and interactions with the red room individually, making it a crucial element of repetition.

Adding to this, Flanagan masterfully pairs this repetition of the red room with the rhetorical device of identification. Rhetorician Kenneth Burke describes identification as “an addition to the rhetoric lore,” explaining that in order to be persuasive, you must first identify with your audience (1286). This is achieved when the audience is able to make connections with other convincing works. He describes the accumulation of these as the “body of identification,” which utilizes the repetition of themes that audiences can identify (Burke 1286-1290). Flanagan deploys this method of rhetoric by referencing common tropes within the horror genre and utilizing these themes within his plot. This circles back to his repetition of the red room and how it “opens” uniquely for each character.

For example, the red room opens to the mom, Olivia, as a reading room, providing relief from her migraines. For Theo, it is a dance studio where she can escape her family's emotional turmoil. Shirley finds a family room for comfort when she isn't able to control her surroundings. Steven finds a game room where he can dissociate from the reality of his childhood. The youngest of the family, twins Nell and Luke, find rooms that reflect their childhood innocence. The dad, Hugh, is never able to enter the red room, as the house protects itself from the one character that might be able to end its feast (Flanagan). In regards to Hugh specifically, Flanagan is referencing an age-old horror trope, and he is banking on his audience's ability to identify it.

It is a common theme within the haunted house trope for the father to be crucial for the rescue of the family. Oftentimes, the father is able to step in and save his family from unspoken evils as he fulfills the role of protector. The article “Dangers Inside the Home: Rereading Haunted House Films from a Gothic Perspective” speaks on the portrayal of this trope, stating that “[t]he issues of the family, which surface through supernatural incidents, lie dormant before they move into the haunted house. In some films, a search for the truth drives the story forward, in which case one family member—more likely to be the father—is engaged in the search.” This trope is present within other works of the horror genre such as James Wan's *Insidious* (2011), Tobe Hooper's *The Poltergeist* (1982), and the more light-hearted *The*

Haunted Mansion (2003), produced by Disney. Assuming that Flanagan's audience enjoys the horror genre, they would have been primed to this theme and be able to make connections through identification.

With this rhetoric in mind, the audience would have expected Hugh to be able to rescue the family from the red room; however, this is not the case. Although Hugh attempts to help his wife when he realizes that her mental state is slipping by, encouraging her to take time away from the house, it ultimately isn't enough to save her. He attempts to fix his family, but in the end is unable to dodge the inevitable when his wife attempts to murder his children and commits suicide. All of this, of course, was guided by the hand of the red room. The creative use of this failed horror trope was purposefully done to subvert the expectations of the audience. This is just one of many plot points tied to the red room where Flanagan utilizes repetition and identification to draw upon the audience's knowledge and establish an overall theme for the show.

In addition to the use of repetition and identification, Flanagan leans on the rhetorical use of metaphors as well. The use of monsters as metaphors is a classic staple within gothic rhetoric and is often used to portray the common societal evils that we fear in real life (Ethridge). Moriah Richard of *Writer's Digest* describes the genre's rhetorical use of metaphors through monsters as critical, explaining that they "focused heavily on topics of morality and were highly metaphorical...The supernatural and monsters were used as a lens through which to view these themes." In this same way, Flanagan uses the red room as a lens to view the generational trauma of the Crain family. By using a monster as a metaphor, Flanagan is able to persuade his audience with fear tactics and expand upon the horrors of unacknowledged mental illness. This draws an unconscious, or conscious, depending on the audience's context, parallel of childhood trauma and monstrosity.

The audience is further clued in to this metaphor by the character Steven Crain. As the oldest of the Crain children, he remembers his childhood more vividly than his siblings. In adulthood, his character is adamant that the house was never haunted and that their mother suffered from severe mental illness. He denies supernatural involvement even when standing face-to-face with ghosts (Flanagan). His denial of the hauntings discredits his family's experiences, which also discredits the causation of their mental health struggles. This is akin to the real-life failure of denying childhood trauma as a contributor to mental illness in adulthood. With that being said, Flanagan uses his character to further highlight this metaphor and draw parallels to the real monster behind the mask.

Pursuant to this, the red room fulfills the role of “monster” within this plot, as it is the metaphorical embodiment of generational trauma. The ghosts that haunt Hill House are its victims foreshadowing the inevitability of Hill House’s evil grasp. The house sustains itself on their mental illness - their anxieties and fears and what plagues and troubles them. Year after year, the red room feeds on new souls, letting their ghosts haunt the next hosts and leading them back to the red room, perpetuating a vicious cycle resembling that of generational trauma (Flanagan). While not a physical monster made of flesh and bone that is typically found within gothic literature, the entity of the red room fits the requirements of monster and metaphor that is prominent within the rhetoric of the genre.

The revelation of this is realized by the audience in the final episode where the red room is shown in its true state. It is a decrepit room with black mold clawing at the walls. Oftentimes in gothic literature, the monster is deformed, signaling its inherent evil. In this case, the mask of a warm, safe place, revealed to be a toxic, mold-infested room points to the silent wickedness of the house, resembling the unspoken effects of generational trauma. An article published in Dawn, a Pakistani newspaper, explains that generational trauma is much like baggage being passed down from one family member to the next, causing mental turmoil, stating that “Ignorance of their traumas has caused them to suppress the pain they go through, and this is likely to continue until they decide to break the cycle of pain.” Flanagan expands on this idea, as the viewer is hit with the realization that not breaking the cycle of generational trauma is succumbing to it, allowing the black mold to spread.

Flanagan’s choice of mold was purposeful, as mold as a physical embodiment of evil is a common trope within the horror genre. Flanagan’s audience is most likely familiar with other movies that leaned into this rhetoric such as *The Haunting in Connecticut* (2009) and *The Amityville Horror* (1979). Both of these movies utilize this trope and use mold as a way to symbolize the growing evil within the home as the hauntings progress. Author Joshua Myers expands on this trope, describing mold as a metaphor for corruption in his essay “The Madness of Mold: Ecogothic in Nathaniel Hawthorne’s *The House of the Seven Gables*,” stating that the “conditions for fungal growth enhance supernatural and existential horrors.” Audiences identify with this already existing theme within the genre and are able to follow Flanagan’s metaphor of rot symbolizing the effects of trauma on a family.

Finally, Flanagan also utilizes the rhetorical device of paradox within the series to provoke fear within his audience and further drive home themes. Paradox is outlined by Mark Moore in an article featured in *Rhetoric Society Quarterly* as something that forces the audience to contemplate new

knowledge and different realities, and “forces the reader to consider something other than, or contrary to commonly held beliefs, attitudes and values.” This method is often used within gothic rhetoric, as the creators look to evoke shock and fear from their audience in subversive ways. In line with Moore’s definition, Flanagan uses paradox alongside fear, hinging on the premise that commonly held values can lead us to frightening ends.

For example, the story of Olivia Crain, the matriarch of the Crain family, begins with Hill House feeding on her fears of not being able to protect her children from harm. She is plagued by visions of the future where she sees her twins suffering from depression and addiction. Through the haunting and manipulation of the red room, she comes to the conclusion that the only real way to save her children is to “tuck them away” forever in death (Flanagan). This scenario presents itself as a paradox, as the common belief that mothers should protect their children from harm is challenged by a gothic, deranged oxymoron that death would prevent a child’s awful fate.

To build on this thought process, “Melmoth the Wanderer: Paradox and the Gothic Novel,” states that the gothic genre expands on the rhetorical device of paradox by “examining the disparity within appearance and reality.” Flanagan accomplishes this within the story of Nell Crain, who ultimately follows the tragic fate of her mother. Nell can’t escape the trauma of her childhood. It literally haunts her in the form of her own personal ghost, the Bent-Neck Lady. The series opens with her suicide, as she follows the (bad) advice of her therapist to confront her childhood home and remove its power from her life. She ends up succumbing to Hill House and commits suicide in the end (Flanagan). This scene in particular stands out within the series, as its dramatic reveal is frightening and crucial to central themes and the overall plot.

The scene opens with Nell being led through Hill House by spirits of loved ones, who ultimately lead her to the same balcony where her mother flung herself towards death years ago. Beside Nell stands the ghost of her mother. She places a necklace around Nell’s neck - the one that she had wanted to inherit since childhood. As she starts to wake, she realizes that the necklace is a rope. Her mother consolingly whispers for her to wake up. She loses balance and falls to her death. Her body sways at the end of the rope for a while, displaying her neck dramatically broken at a sharp angle. Nell is still conscious. Suddenly, the setting changes. Nell falls into darkness and through time, revisiting moments in her life where she saw the figure of the Bent-Neck Lady. At the final scene, she locks eyes with her childhood self during the first experience she ever had with the ghostly apparition. Nell lets out a guttural

scream as she realizes that she was the Bent-Neck Lady the whole time (Flanagan).

This scene provoked shock within the audience as it drew hazy lines between what they held to be true and what was happening. Nell appeared to be haunted by a ghostly apparition her whole life, but the haunting revealed itself to be entirely self-inflicted. She foreshadowed her own death as her own ghost in her own childhood. Unable to shake the grasp of generational trauma, she tragically fell to depression and suicide like her mother before her (Flanagan). This is a powerful moment, as the whole series circulates around her suicide. The audience is taken on a cathartic journey with Nell from start to finish and is made to sympathize with her pain as she grapples with grief and depression. However, the details of her suicide are left out until the very end, making it a shocking turning point for the audience and further subverting their expectations. This consequently leads to the paradoxical realization of the Bent-Neck Lady and all that she implies.

Overall, the sum of the use of these rhetorical tools within gothic horror produces fear within the audience. Fear is another rhetorical device that can be used to sway or motivate an audience, often associated with the rhetorical devices pathos or logos (Olson). An article by Molly Olson, published in *Rhetoric in Everyday Life*, states that research suggests that fear may be the best motivator for changing behavior in individuals, as we all ultimately fear our own demise. Gothic horror as a genre hinges on this premise and feeds on the audience's most primitive emotion. Flanagan follows suit and uses fear to manipulate his audience and tug at their emotions. In the case of the Bent-Neck Lady, Flanagan provokes the common fear of a self-fulfilling prophecy and the horror of our worst fears coming to fruition by our own hands.

In agreement with this, author Benjamin Ethridge states that the strategies to evoke these emotions are unique to the genre, stating that "The Gothic novel, through its rhetoric of fear, aims to engage with the reader in hope of stimulating his curiosity and making him revalue the ideas and the objectives of the dominant societal, religious, political, scientific and philosophical positions." In this same way, Flanagan's adaptation asks the audience to re-evaluate their thoughts on generational trauma and its reach into adulthood, and what part the individual has to play in this process as they reflect upon what happened to Nell.

Ultimately, Flanagan's examination of the reality of the effects of trauma on adulthood serves as an important rhetorical narrative on mental health. By portraying the horrors of trauma in a gothic setting using a house as a monster and ghosts as paradoxical players, he is able to allow the audience to identify with the characters and cathartically digest the weight of unresolved trauma. This element helped the show rise in popularity, as

Flanagan's take on *The Haunting of Hill House* connected with audiences, as mental health became a pressing issue within society. The same year it aired, the National Institutes of Health (NIH) released a compelling study on the results of past trauma on mental health, urging healthcare providers to shift from asking "What is wrong with you?" to "What happened to you?" (Sweeney et al.). This fundamental shift within healthcare highlights Flanagan's cathartic work as an important cog in the machine of mental health awareness; the audience is made to see the connections of what is wrong with the Crain family as being correlated to what happened to them.

With this in mind, the audience is able to cathartically live through the shared traumas of the Crain children, identify with their pain, and take part in their reconciliation with the past. This idea of catharsis is an important tool that rhetoricians use to move their audience. Aristotle coined the term that we use today in his work *Poetics* to explain the emotional rollercoaster that the audience is taken on when viewing a tragedy. The Internet Encyclopedia of Philosophy states that Aristotle felt like tragedy is a paradox, stating that "In a tragedy, a happy ending doesn't make us happy. At the end of the play the stage is often littered with bodies, and we feel cleansed by it all." Flanagan fits Aristotle's definition closely, as the ending is littered with grief and death, but ultimately cleanses the audience with its overarching theme of reconciliation and ending generational trauma.

For example, the series climaxes with the Crain family returning to Hill House. All of the children are trapped within the red room after having battled their own individual psychological horrors. The ghost of Nell is present, and the siblings are finally able to reconcile with their late sister. Nell forgives and reassures them, explaining that life is made of moments, good and bad. She reminds them that she loved them completely, that they loved her the same, and that "the rest is confetti" (Flanagan). This scene serves as a perfect end cap to an emotional ride, allowing audiences to cathartically reconcile their own traumas alongside the Crain children. The horror genre as a whole allows audiences to remotely live through characters in this way, thus providing a safe space to digest their own horror stories.

In conclusion, Mike Flanagan's take on the classic horror novel, *The Haunting of Hill House*, masterfully uses a gothic horror backdrop to portray the horrors of generational trauma and its effect on adulthood, ultimately ending with a message of hope to break the cycle. He uses many tools from the gothic horror rhetoric toolbox, such as repetition, identification, metaphor, paradox, and fear, allowing the audience to have a climatic, cathartic experience. This catharsis lends to the modern conversations surrounding mental health, making the series an important talking point in regards to

generational trauma. The emotional rhetoric of the red room falls throughout the show in moments, making its way into the hearts of the audience and coloring the show as a whole; the rest is confetti.

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Let's BookTok About It: The Impact of Book-Focused Social Media Spaces on the Literary Community

Kaya Barringer

Deep in the wide world of the web, book-focused social media spaces are on the rise. Some downloadable apps, such as Goodreads, have been specifically invented to let readers interact through writing reviews and joining online book groups. Social media apps like YouTube and Instagram have entire sub-communities, named BookTube and Bookstagram respectively, devoted to sharing opinions on literary topics. However, it was not until the rise of BookTok, a sub-community of the app TikTok that emerged in 2020, that these spaces really took off. The recent spotlight on these apps begs the question, how have book-focused social media spaces impacted the literary community? Current research has shown dramatic impacts on how books are being read, published, and written based on the influence of social media. In this literature review I will explore how book-focused social media spaces have popularized reading through community building, influenced the purchase of books, sparked a debate on diversity in literature, and required authors to maintain a social media presence.

Popularizing Reading Through Community Building

A chief way that book-focused social media spaces have transformed the literary community is by simply bringing more attention to it. According to "BookTok 101: TikTok, Digital Literacies, and Out-of-School Reading Practices" by Sarah Jerasa and Trevor Boffone, social media spaces, mainly BookTok, have drawn new readers in and made reading "cool" by allowing for communities "with books not considered 'appropriate for academic spaces.'" Book-focused social media spaces have gained popularity among younger age groups, mainly teenagers and people in their 20's. They are able to interact with one another by recommending books, participating in reading challenges, and joining online book groups. Reading, an activity that has previously been thought of as a solitary activity, has now been introduced to the aspect of community.

This aspect of community has been repeatedly mentioned in research conducted on these social media spaces. In "Sharing is Caring: Young People's Narratives about BookTok and Volitional Reading" by Asplund Stig-Börje, BookTok was defined as "a community of literary video-bloggers or vloggers" that promotes reading for pleasure. To identify how BookTok influences reading for pleasure, Stig-Börje's study interviewed eight female students aged seventeen to eighteen years old who use BookTok. Interviews were conducted, followed by an analysis of their narratives and experiences with this social media community. Participants commented on how BookTok

reinstated their love for reading. They referred to BookTok as a “community” that turned reading into a trend. One participant also commented on how “it was ‘most enjoyable’ to read BookTokers’ comments if she had read the book” (Stig-Börje). BookTok also allows people to see others’ reactions to books, increasing their drive to read them.

This sense of community is not just present in BookTok. “Faraway, So Close: Seeing the Intimacy in Goodreads Reviews” by Beth Driscoll and DeNel Rehberg Sodo takes the previous research on community and applies it to Goodreads reviews. Goodreads is an app that was created in 2007. Readers can keep track of the books they have read, write reviews, and even interact with authors through live author chats. Driscoll and Sodo analyzed 692 Goodreads reviews of 7 bestselling fiction and nonfiction books to showcase the specific intimacy present in bookish social media communities. They recorded the usage of the word “you,” finding that “more than one quarter (27.5%) of [the] reviews addressed a future reader” (Driscoll and Sodo 254). Readers can interact with one another in a digital space, allowing for a connection and community building.

However, arguments about what one must do to truly be a part of this community have been called into question. These social media spaces seem to emphasize the importance of owning and collecting physical books, a luxury that many cannot afford. Christian Ehret and colleagues in “The Role of Affect in Adolescents’ Online Literacies: Participatory Pressures in BookTube Culture” interviewed Emma, a prominent BookTuber, who commented on how huge book hauls and perfectly arranged bookshelves have become a staple within the BookTube community (155). This intimidates those who want to join it and potentially become a big-name BookTuber. The book-buying phenomenon was referred to as a “participatory pressure” and a possible “economic barrier to entry into the BookTube community” (Ehret et al. 156). More research on the type of reading that social media is pushing would be beneficial to fully understand the scope of this issue.

Influencing the Purchase of Books

This popularization of reading has resulted in research on how book-focused social media communities are impacting the publishing industry through the purchase of books. Through book influencers marketing the latest releases and publishing houses taking to the current trends, social media has dominated the way users approach buying books. Hoan Viet Nguyen and colleagues conducted a study titled “The Role of Social Media in the Purchase of Books: Empirical Evidence from Vietnam’s Publishing Industry.” This study took place in Vietnam, a country with a rapidly growing book market, and interviewed 313 people outside of bookstores. The study found that “81.2% of

respondents sought user-generated content such as reviews, comments, and posts” when buying books (Nguyen et al. 706). Information from everyday readers is viewed as more trustworthy and reliable compared to the more specialized content of authors or publishing houses. Additionally, 33.2% said they used social media to get introduced to new books, and 26.5% commented on how social media helps them decide what book to purchase (Nguyen et al. 707). While social media helps in purchasing books, the study found that it is most important in the post-purchase stage. Participants rated the importance of social media at every stage of purchasing books, with one being not important and five being very important. The mean for the post-purchase stage was 4.12. Users rated this highly because they can “share opinions and satisfaction about the chosen books as well as compare their experiences with others” (Nguyen et al. 707).

This phenomenon of readers posting their reviews online has given way to book influencers, which are people who post their reviews and bookish opinions online and gain a following from it. This has provided a new avenue for publishers to market and sell their latest releases. In “Negotiating Collaborations: BookTubers, The Publishing Industry, and YouTube’s Ecosystem,” José M. Tomasena outlines the possible exploitation of book influencers turning into advertisements. Publishing houses have faced drastic changes. Using Spain as an example, the number of books edited and sold “has dropped by 34.67%” in the last 8 years, yet many new books are still being published yearly (Tomasena 2). Publishing companies have been utilizing book influencers to revive the practice of buying books. Traditionally, publishing companies will send the influencers free books in exchange for reviews. However, in more grandiose cases, publishers will “invite them to special events, like movie premieres or meetups with their authors” (Tomasena 6). Book influencers also plan giveaways with publishers, in which the influencers give away books to their followers through social media contests. This allows influencers to get engagement whilst the publishers get exposure.

While this practice has generated more income for publishing houses, critics are beginning to question the legitimacy of using book influencers as marketing tools. The chief concern is that these book influencers do not have any kind of credentials to qualify them as trustworthy sources for book reviews and general content. Additionally, the insincerity of book influencers promoting books that they may or may not love on account of an agreement with a publisher has been called into question. Oscar Leal, a Mexican BookTuber, sparked controversy with this take in 2015 when he “proposed the hashtag #Prostitubers (“prostitutes + BookTubers”) to discuss how BookTubers were faking love and passion in exchange for free

books" (Tomasena 7). Book influencers have generated more revenue for the publishing industry at the potential expense of leading their followers astray.

Diversity in Literature

Sources are mixed on whether these book communities are fostering a key aspect of literature: diversity. Trevor Boffone and Sarah Jerasa analyze the popularity of Cemetery Boys to show the diversity of the communities in their article "Toward a (Queer) Reading Community: BookTok, Teen Readers, and the Rise of TikTok Literacies." They point out that social media has made a space for queer readers to meet each other and recommend queer and POC (person of color) literature. Cemetery Boys, a story about a trans boy written by the trans-Latinx author Aiden Thomas, quickly went viral on TikTok. Many BookTokers included this book in recommendations for "Fantasy Books with Latinx Main Characters" or "LGBTQ+ Books: MLM Version" (Boffone and Jerasa, "(Queer) Reading Community," 12). Other videos took the book and fit it into current TikTok trends, such as Lisa Huang using the "please don't be ugly" sound to show off the book's intricate cover (Boffone and Jerasa, "(Queer) Reading Community," 12). They argue that book-focused social media spaces make it significantly easier for marginalized communities to flourish and prosper, as well as promote books with diverse characters at the forefront.

However, others have commented on how outside of queer and POC-specific sub communities, the general, most popular books and influencers do not celebrate diversity. According to "The Influence of BookTok on Literary Criticisms and Diversity" by Alysia De Melo, BookTok in particular tends to preach diversity, yet "creators of color have reported anecdotal evidence that their videos are more likely to go viral when they stitch (combine a part of another creator's video to your own) a White creator's content." Additionally, many of the books highlighted on BookTok are by white authors or feature characters that are white and cisgender. This study analyzed the top 15 videos under the "BookTok" and "BookRecommendations" hashtag and the five most recent videos from five popular BookTokers. The study found that the top BookTokers showed their faces, establishing a personal connection to the audience, and most of the creators were white. The study noted that "out of the 134 authors [recommended], there were 94 white authors" (De Melo). The study found it difficult to determine the races of characters in the books but determined that "every single Black author wrote about a Black main character" while white authors did not disclose a specific race for their characters (De Melo).

Authors on Social Media

Finally, the writers within the literary community have been impacted by the rise of book-focused social media spaces, though scholars are split on whether the impact has positive or negative implications. Authors are realizing now more than ever that they need to utilize and build a social media platform for themselves. Fidela Shaumi Suryadi and Deni Suswanto point out in their article “Influence of Digital Media on Creative Writing” that digital media can facilitate “collaboration, feedback, and support across geographical boundaries,” which contributes to spotlighting diverse voices as writers are exposed to different “cultural narratives and storytelling techniques” (1784). Writers can discuss their ideas with each other instantaneously. Writers can also have direct contact with potential readers and build hype for their books. The comment, like, and share buttons make it easy for writers to engage with potential readers worldwide. Authors can receive prompt feedback on their work, talk with others about their writing, and easily promote their new releases (Suryadi and Suswanto 1785- 1786).

However, it is important to note that authors having a social media presence is not always beneficial and is not always their choice. Publishing companies have begun to force writers to create and maintain a social media platform, which disturbs what Kim Wilkins calls “resilient writing.” The practice of resilient writing is “writing that can stand up to demands, distractions, and setbacks” (Wilkins 68). A major threat to resilient writing is the publishing industry pushing authors to create platforms, “a digital authorial identity that can be leveraged to build markets and increase sales” (Wilkins 68). Authors are expected to create social media accounts and spend time and energy on their development. While a social media platform does increase visibility, it also causes authors to lose time that could be spent writing, distorts their self-image, and introduces distractions. Writing promotional materials for social media uses up valuable time that could be spent writing, with authors needing “to spend 80% of their social media writing on topics unrelated to selling their work in order to keep their followers on-side” (Wilkins 69). Authors also find themselves turning to social media for feedback and reassurance. Social media is easily accessible, so anytime writers experience a slowdown in their ideas, they pop over to social media. In a survey of 271 writers, 86% said they get distracted by the Internet, hindering them from meeting their writing goals, and 63% said that “they felt pressure to maintain an online authorial presence” (Wilkins 71).

Conclusion

Book-focused social media spaces are continuously on the rise and are impacting many areas of the literary community. By creating specific spaces for readers to convene and unpack their bookish opinions, reading has been re-popularized and has been exposed to the aspect of community. However,

these social media communities seem to be pushing a specific type of reader by highlighting the act of having books. More research on what one must do to fit into online book communities is needed to fully understand this issue. Feeding off this popularization, publishing industries have noticed the sway book influencers have and therefore used them as advertisements. It is now unknown whether influencers are promoting books they like or promoting based on a publishing partnership. When it comes to diversity in literature, some argue that it is easier for marginalized communities to find spaces online and promote diverse books, yet others argue that the literary community is still overtaken by books by white authors about white characters. Finally, authors have been exposed to social media by developing a platform, which aids in sharing ideas with other authors and potential readers. However, some authors are forced to create a platform and have realized that creating and maintaining one results in a loss of time, as well as a distorted self-image and distractions from writing.

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The Lightning Thief as Modernized & Neurodiverse Mythology

Nash Porter

With the release of the Percy Jackson and the Olympians live-adaptation series on Disney's streaming service, generations new and old will be able to visit (or revisit) the age-old question of what it means to be a hero. Released in 2005, the first part of this series - *The Lightning Thief* by Rick Riordan - paved the way for legions of young readers to find themselves engrossed in another realm that seemingly lies beneath our own, at least in the imagination. This realm recontextualizes the ancient Greek myths in a more contemporary setting, with equally updated themes and elements. In *The Lightning Thief*, however, monsters and angry deities aren't the only forces that the young demigods in the novel must face. When it comes to Percy Jackson's world, neurodivergence plays a big role in shaping the life of a hero, even if they may struggle on the other side of "the Mist." This is an important part of the Percy Jackson and the Olympians series that has allowed young neurodivergent readers to discover not just heroism in themselves, but community in others just like them (as the author of this essay can attest). Almost twenty years since its release, *The Lightning Thief* still makes a strong case for its place in young adult, fantasy, and neurodivergent literature, as well as a potential source of scholarly analysis in fields such as mythology, literary studies, and pedagogy.

Neurodiverse young adult literature (NYAL) is a genre which has been studied and discussed by previous scholars, including Miriam DesHarnais and Lisa M. Barker in their article "Life and Literature Beneath the Surface: Using Neurodiverse Young Adult Literature as Mentor Texts for Narrative Writing." They outline the impact that NYAL books can have when it comes to facilitating discussions about mental health and neurodivergence. Specifically, the article points out that when writing neurodiverse characters, "writers often make compelling, unconventional choices with structure, format, syntax, punctuation, and diction" (DesHarnais and Barker 82). This atypical approach to writing, according to the authors, is an important part of what makes a book a mentor text, a model for students and young writers to try out the stylistic choices provided within. Mentor texts also serve as ways to conduct "teacher-facilitated whole-class discussion," allowing students to come together in a healthy environment to make sense of and interpret a given text (DesHarnais and Barker 83).

Any "unconventional" stylistic choices in *The Lightning Thief* might not be readily apparent at first glance. This could be related to Riordan

primarily working with second-hand knowledge of attention-deficit/hyperactivity disorder (ADHD), as the story was originally written for his son. However, Percy's narration, as well as his self-stated qualities, show interesting word choices that serve as possible examples of his attention deficiencies. This is first seen when Percy is dealing with a bully, Nancy, after she dumps food into his lap; he attempts to "count to ten" to calm himself down, as a school counselor instructed, "But I was so mad my mind went blank. A wave roared in my ears. I don't remember touching her, but the next thing I knew, Nancy was sitting on her butt in the fountain" (Riordan 9). The lack of scene detail, coupled with a shift in action, is referred to in-text by Percy as "if a puzzle piece fell out of the universe and left me staring at the blank place behind it," and he was told that this was an aspect of his ADHD causing him to "misinterpret" events (Riordan 11). This is, in fact, a common element of ADHD, though Percy casts doubt on whether or not he is truly "misinterpreting things" - a lack of detail does not necessarily mean something has been remembered incorrectly.

In Percy Jackson's world, neurodivergence doesn't just have a place—it has important meaning and relevance to a demigod. However, this does not hold the same for his life on the other side of the Mist. Percy, as the main character, is open and unapologetic about his various diagnoses. However, he also laments how much difficulty this brings him when it comes to school, especially in the case of his mythology teacher Mr. Brunner: "...Despite the fact that I have dyslexia and attention deficit disorder and I had never made above a C- in my life ... [Mr. Brunner] didn't expect me to be as good; he expected me to be better" (Riordan 7). Even though Percy faces considerable challenges in learning, with little success, he is still held to high expectations by the adults in his life, surpassing even those of his peers.

Being able to see Percy struggling in this way is crucial for students with similar behavioral difficulties, as it allows them to relate to his low self-esteem at this point in the book. For example, rejection sensitivity (not an official symptom, but a widely reported facet of ADHD) is featured during a prominent moment early on in the novel after Percy is told by Mr. Brunner that Yancy Academy "'isn't the right place'" for him. Percy says, "Here was my favorite teacher, in front of the class, telling me I couldn't handle it. After saying he believed in me all year, now he was telling me I was destined to get kicked out" (Riordan 22). Though one could discern later on that Mr. Brunner likely just made a poor choice of words at the moment, the reader is familiar enough with Percy's current mental health and self-esteem that it becomes obvious just how much he is feeling rejected by the one teacher he felt he was able to trust.

In addition to unique stylistic choices, NYAL can also help readers reframe their understanding of seemingly opposing concepts, such as

“disability” vs. “normalcy.” Jen Scott Curwood’s “Redefining Normal: A Critical Analysis of (Dis)ability in Young Adult Literature” compares novels where the main characters exhibit various conditions (ranging between physiological, mental, and emotional) to analyze how these works construct disability. When looking at the novel *Jerk*, California, she notes that the main character Sam/Jack (who has Tourette’s syndrome) “feels profound anger and isolation from the world” as a result of stigma from both his stepfather and others (Curwood 22). This is a common experience for young people with undefined mental illnesses and neurodivergence who find themselves stuck between childhood and adulthood, unable to fit into one or the other. It’s only when he finds himself around people who see him as “smart, capable, and worthy of love” that Sam/Jack begins to rediscover his identity (Curwood PG#). Namely, “His stepfather and classmates, in particular, reinforced a normalcy narrative that privileged those who could control their bodies,” until Sam/Jack realized “he can write his own disability counternarrative” (Curwood 22). This is the power that stories that center disabled and neurodivergent voices can have: the ability to show young readers that they are in charge of their own stories, not any outsider.

The entirety of *The Lightning Thief* serves as a sort of “disability counternarrative” - in fact, it is heavily tied to the “hero’s journey” that Percy must follow as he is introduced to the realm of gods and monsters. As he becomes acquainted with Camp Half-Blood, he is informed by Annabeth Chase, daughter of Athena, that his neurodivergence is a result of his godly heritage. As an example, she states that “as for the attention problems, that’s because you see too much, Percy, not too little” (Riordan 88). Annabeth’s words mirror a common understanding of ADHD as an inability to regulate attention, rather than an absence, in spite of its name (Pritchard). The adults in his life who refuse to offer him meaningful assistance therefore are not allies, but are also specifically antagonistic towards him because of his status as a semi-divine hero. According to Annabeth, most of the campers have gone through similar experiences with adults not accommodating their needs, making Camp Half-Blood the only place where young heroes such as Percy and Annabeth can find some sort of sanctuary.

In addition to dialogues on neurodiversity and disability, the benefits of reading *The Lightning Thief* as an adaptation of Greek mythology, and specifically one written for adolescents, cannot go unnoticed. This “re-writing” of ancient texts is discussed by Alexander Leighton in his article “Re-Discovering Mythology: Adaptation and Appropriation in the Percy Jackson and the Olympians Saga.” In particular, Leighton calls attention to how unimportant it is to young readers that a certain original text came first before

any retelling because the appearance of these appropriated stories are almost always the first experience such readers have with these ancient myths. It's not just that young readers connect to these stories because they're technically more "new," however. Leighton points out that along with a more modern setting "Many of the values, outcomes and associated morality of the Greek myths are revisited and given a new perspective, reflecting more closely perhaps the morals, values and attitudes of the contemporary culture" (63). This provides added complexity to the narrative, while also allowing the young reader to make more meaningful connections to the original myths.

Not only are the settings and themes updated, but so are the actions and motivations of the central heroes of the story. According to Leighton, "Many heroes of Greek tragedy and Greek mythology made poor choices which ultimately signalled their doom and many readers may expect Percy's fate to be similar" (66); this is not strictly the case in *The Lightning Thief*, however. While Percy is still shown to be impulsive and rash on several occasions (such as mailing Medusa's severed head to Mount Olympus, home of the gods), he and his friends often make more tactful and nuanced decisions when dealing with elements of the mythological world. Updating these characters' motives for a contemporary young audience "allows readers to make different inter-textual associations and form meanings and understandings of their own" (Leighton 66). This comes up often, for example, in the relationship between Percy and Annabeth, who at first exhibit tension with each other because their parents, Poseidon and Athena, have an infamously bitter rivalry stemming back thousands of years.

During a particularly brusque moment in the novel, as they approach St. Louis, Percy wonders out loud to Annabeth if their parents ever had to cooperate on something. Eventually, she comes up with an answer: "'I guess... the chariot,' she said tentatively. 'My mom invented it, but Poseidon created horses out of the crests of waves. So they had to work together to make it complete'" (Riordan 202). Because their survival depends on their cooperation with each other, Percy and Annabeth have to look to the past to find ways in which they both can have common ground. In this "adaptation" of Greek mythology, the heroic figures have considerable insight into the history and nature of the gods that the "original" Greek heroes would not have been as likely to possess. Such a level of critical thinking and thoughtfulness is influential to young readers who may not immediately connect with the choices made by heroes such as Oedipus or Perseus. This characterization of Percy and Annabeth is important because it combines the knowledge of the "root narratives" with a contemporary reimagining of said stories in such a way that "may inspire readers to seek out and explore their adaptations' hypotexts" (Leighton 67). In other words, adaptations of ancient texts may serve as a gateway for young readers to discover these origins.

For young readers, being able to see oneself reflected positively in a story is precisely why representation in literature is so vital. When paired with fantasy elements, such a story can establish itself as a narrative of empowerment. This allows young adults to see themselves in ways they may not have seen yet in their own lives and inspires them to find or create places of community in order to find others like themselves. The *Lightning Thief* is no exception to this with its cornerstone acceptance of neurodivergence, a stylistic understanding of a neurodivergent mind, and an embracing of neurodiverse young adults as heroes-in-training. The novel responds to the themes and assumptions made by its ancient source material in a way that informs the characterization of the central heroes of *The Lightning Thief* and, as a result, the appreciation of the audience in both the adapted text and the original sources. Throughout the entirety of the *Percy Jackson and the Olympians* series (as well as its sequels), we also see how Riordan discusses other themes such race, gender identity, and sexual orientation by using the same principles he uses for neurodivergent narratives; that is, at the end of the day, a hero is a hero, no matter who they are, and one's differences can form an important part of this heroic identity as long as one finds the right place to be themselves.

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Cheaters Gonna Cheat

Dylan M. Grisham

In discussions surrounding artificial intelligence (AI), there is a widespread acknowledgment of its transformative impact on education. However, this agreement usually ends with the influence of AI on academic integrity and cheating. While some argue that AI may exacerbate cheating, my stance, which is shared by others, argues that the inclination to cheat existed long before the advent of AI. Surprisingly, there are indications that the introduction of AI has contributed to a reduction in cheating within the educational sphere. AI-enhanced tools not only simplify the process of catching plagiarism but have also proven effective in curbing less obvious forms of cheating. My perspective challenges the notion that AI encourages an increase in cheating, and instead emphasizes its potential role in fostering a more accountable and honest learning environment.

Education serves as a foundation for personal and societal growth, and degrees earned through earnest means carry incredible value in the workforce. Degrees are not merely pieces of paper; they symbolize a person's knowledge, skills, and dedication. Employers rely on these credentials not only as indicators of a candidate's competence but also for suitability in a potential position. As such, cheating calls to question the integrity of academic achievements and poses a significant threat to the sanctity of the education system by jeopardizing the trust that employers place in educational institutions. When someone resorts to cheating they compromise the authenticity of their qualifications, rendering the entire education system susceptible to skepticism. This erosion of trust can have far-reaching consequences, negatively impacting the workforce and the broader societal perception of the education system as a whole. Upholding the sanctity of the education system is crucial to ensuring that degrees continue to serve as meaningful and reliable indicators of a person's ethics and capabilities.

From borrowing and copying a friend's homework, to the age of the internet where answers to most school problems are readily available with a simple Google search, cheating has been prevalent, and easy even, since the dawn of schooling. In the early days of cheating students may have written some answers on their hands, or hid a small note with answers. Cheating has been commonplace in schools in many different ways and for quite a long time. In a report from 2001 created by Donald McCabe, the "founding father" of research on academic integrity, it was found that 77% of students had gotten questions and answers from someone who had already taken the test, while another 68% turned in work copied by another person (Cheating). A follow-on study conducted by McCabe from 2002 to 2015, prior

to the introduction of AI, found that “62% of undergrads admit to cheating on written assignments at least once” (Statistics on Cheating).

While these practices are probably still in use, cheating has evolved in many ways due to the advancement of the internet. There are many “flashcard” sites that mirror exact copies of quizzes and tests, allowing for students to quickly type in a question from a quiz and get their answers immediately. A student may also simply search for a subject that has already been covered, and copy nearly word for word into their essay and hide it by changing out words. The ability to cheat has always been available, and while AI does simplify the process that doesn’t mean that more students are using it.

While my perspective emphasizes the potential positive impact of AI on reducing cheating in education, others argue that the emergence of AI may not necessarily lead to a decline in academic dishonesty, but rather introduces new challenges. Skeptics say that the tools designed to catch plagiarism and detect cheating could prompt a cat-and-mouse game, where students and AI models continuously adapt to outsmart evolving AI detection algorithms. The rapid development of technology may outpace the enhancement of detection tools, creating a struggle for educators to keep up with the new innovative cheating methods. To combat this, educators need to be vigilant in coming up with systems that can catch this level of cheating.

One possible solution, if the school enforced the use of the Google Doc ecosystem, is to use the browser extension DraftBack. This extension allows the teacher to view edits made by students who share their documents as a “live” recorded document, which would allow teachers to see if large portions of text were added at a single time or if it was typed out thoughtfully. It has the added benefit of giving teachers insight into how their students think and write. This is only one example of a way for the education system to adapt and overcome the challenges facing academic dishonesty. Continuous research and adaptation of detection mechanisms to stay ahead of emerging tactics, which ultimately upkeeps the integrity of the educational environment, is vital to maintaining the sanctity of the education system and the benefits it provides.

As AI becomes more commonplace, there is concern that the temptation for students to exploit its abilities for academic shortcuts may grow, potentially leading to an increase in cheating. Recent studies, however, provide insights that challenge some of these concerns. In a question and answer session between scholars at Stanford University, Denise Pope reported, “[the] percentage has stayed about the same or even decreased slightly in our 2023 surveys, when we added questions specific to new AI

technologies, like ChatGPT..." (Spector). This isn't likely due to not knowing about the platform either, as it has gone viral on many different social media platforms in use by youth today. In a study from November 2023 conducted by Pew Research, they found that while 66% of teens have heard of ChatGPT only 19% of them have used it for school work (Sidoti). That is significantly lower than the percentage of students copying off of their friends or cheating on their tests. In addition to students not reporting to have used ChatGPT or other language models, the advancement of plagiarism detection tools has made cheating a scary prospect for many low-effort cheaters.

While there are many ways that students can use ChatGPT and other language models to build an essay for them, AI has a knack for repeating itself. For example, If prompted to build an essay around football, many of the same idioms and phrases that the language has pulled from its databases would be used to build another essay around the softness of cats. In addition, these language models will typically use a general model for building sentences which makes it easier for teachers to detect. A quick Google search for AI detection tools will net many different results, ranging from relatively "simple" plagiarism checking tools down to syntax detection that can specify the model used. Though, the latter is developing and still has many false positives.

Many of these tools are readily available to anyone, and in some cases are offered for free. Within the grammar checking app, Grammarly, there are plagiarism detection tools built in for teachers to be able to use. In a study conducted by Harvard University, it was found that these tools are extremely effective, and "...[Harvard's detection tools] were able to detect fake text with an accuracy of over 72%..." (Gehrmann et al. 112). As AI develops so will detection tools, and Harvard likely isn't alone in developing its own AI detection. Therefore, while teachers may be worried that the use of these AI programs will make their students lazy, tools are becoming more available to deter would-be cheaters and catch those who make the mistake of actually following through.

In conclusion, the integration of AI into education has undeniably reshaped the learning landscape, prompting debates on its impact on academic integrity and cheating. While there are concerns that AI might facilitate dishonest practices, the historical prevalence of cheating suggests that such behaviors already existed independently of technological advancements. Some indicators have emerged saying that the introduction of AI has contributed to a reduction in cheating, possibly attributed to enhanced plagiarism detection tools and an increased awareness of the consequences associated with AI-enabled dishonesty. The perspective presented challenges the assumption that AI inherently encourages cheating, highlighting its potential for a more accountable and honest learning environment. As

technology continues to evolve the proactive use of AI detection tools coupled with educators' vigilance provides a promising deterrent against academic dishonesty, reinforcing the importance of maintaining integrity in education.

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Transferring with Ease: Optimizing the Transfer Process for Students at Park University

Brooklyn N. Lawrence

Executive Summary

To grow transfer student rates and retain students, Park University should overhaul its online design, outreach, and advisory strategy. Providing accessible information would draw in prospective transfer students, as well as provide 24/7 access to important contact addresses and enrollment requirements. Overhauling the advisory team strategy will set students up for success in their courses as well as encourage confidence in the abilities of the university. I am confident that implementing these new strategies will boost enrollment of transfer students to Park University.

To ensure growth in enrollment rates, I recommend the following:

- Park University should reconfigure their online presence to be more accessible.
- Add clearly defined lists of requirements for enrollment.
- Advertise orientation events geared towards transfer students.
- Implement course evaluation programs into the website, as seen similarly at University of Missouri - Kansas City (UMKC).

Park University should overhaul their current fronting enrollment advisory program.

- Retrain enrollment advisors on necessary courses for degrees.
- Hire more staff for the Student Success Department to mitigate mistakes caused by overwhelming caseloads.
- Have regular meetings between advisors and department heads to ensure there is no confusion on degree requirements.

After one year Park University should conduct a survey over the results from the implementation of these methods.

Introduction

To avoid further drops in transfer enrollment rates, Park University has contacted me to evaluate what changes need to be made to ensure growth.

Purpose and Scope

Park University is a well-known and highly regarded collegiate-level educational institution, with its flagship office located in Parkville, Missouri. When prospective students look into transferring to Park University the available information is lacking and hard to locate. The purpose is to decide whether or not Park University should overhaul their online presence for accessibility and retrain the advisory team on detailed degree

requirements. This report will cover several topics regarding Park University including enrollment rates, advisory procedures, and online presence and accessibility.

Assumptions

The recommendations made are based on the assumption that Park University wants to grow its enrollment of transfer students. I am assuming that Park University will hold the same estimated amount of majors and programs at the time this program is in place, and that no extenuating circumstances will apply (e.g. pandemic, natural disaster, war, loss of campus operations).

Methods

The information in this report comes from online sources and reference statistics. The statistics used that are specific to Park University were made available to the public online. The majority of the research comes from Stephanie Easterday’s thesis regarding the advisement needs of college students.

Definitions

There is a term found throughout the report that I would like to explain beforehand. The term is “Student Success Coach,” which is used to describe the first level of advisory available at Park University. These are the advisors that will be discussed in this report.

Criteria

I have established criteria that needs to be favorable for enrollment to grow at Park University. They are ranked by importance and percentage below.

- Previous enrollment statistics – 20%
- Online accessibility – 40%
- Advisory procedural overhaul – 40%

I will examine each criterion separately and give a favorable or not favorable recommendation. Advisory procedural overhaul and online accessibility are weighted the heaviest, therefore requiring at the minimum a somewhat favorable recommendation. There must be at least a 70% total favorable recommendation to receive a positive recommendation overall.

Park University Enrollment

Park University’s enrollment statistics are published online annually following the completion of the academic year. These statistics provide information regarding types of students, program enrollment, and retention rates.

Student Demographics

Park University reported 7,762 students in the 2021-2022 academic year and 6,634 students in the 2022-2023 school year (Park University Fast Facts, 2023). This one statistic demonstrates a decrease in enrollment as a whole. It was found that in 2023, only 2,695 students were enrolled full-time in undergraduate programs. This breaks down to roughly 50.1% of the undergraduate population (Park University Fast Facts, 2023).

Program Enrollment and Faculty

Park University reported 60,155 undergraduate credit hours taken in the 2022-2023 academic school year with the most enrolled disciplines being Business Management, English, Natural and Physical Science, and Psychology. The university offers 58 undergraduate major programs and 29 certificate programs. It's noted that there are 104 full-time professors, 600+ adjunct, and 64% of full-time faculty who are tenured or are tenure-track. Lastly, 79% of full-time faculty have a doctorate or other terminal degree (Park University Fast Facts, 2023).

Retention Rates

The university reports a retention rate of 57% for first-time full-time students and 36% for first-time part-time students. It also notes that 24% of these students will go on to graduate from the university with 37% of students eventually transferring out of the college.

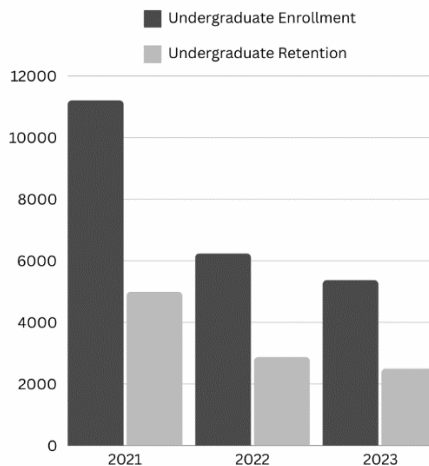


Figure 1: Enrollment and Retention Rate Comparison
(Source: Park University, 2021-2023)

Student Satisfaction

According to reviews left by students among several different websites, the average satisfaction of students at Park University sits at 3/5. Student complaints range from “It was always impossible to get ahold of every advisor I ever had,” to “Attending Park University was a horrible experience!” (Park University Reviews, n.d.). While there are good reviews such as “Park is an excellent, small college,” and “I love Park University,” many were left before 2018 (Park University Reviews, n.d.). These reviews regarding student satisfaction follow the same trends as enrollment rates – downwards.

Online Accessibility

In the modern age of online access at the touch of a button, Park University’s online presence needs an upgrade. The following items should be addressed regarding the optimization of the official university webpage.

Enrollment-Active Pages

Enrollment-active pages is an umbrella term for sections that “most directly impact enrollment outcomes” (EAB, n.d.). These pages can cover topics like tuition costs, academic disciplines, admissions procedures, and campus visits. These sections should be the most developed with easy-to-read material and detailed links. Appearing currently on the Park University web page are links to these enrollment-active pages without much detail or guiding content.

Common Deterrents

There are several reasons that prospective students may click off of the university website, also known as deterrents. Finalsitem.com conducted a survey with over 1,500 education institutions, and created a list of the commonalities between low-performing pages. These can include “confusing navigation, outdated content, and overwhelming graphics” (Top Website Homepage Optimization Tips for College and Universities, n.d.). All three of these are present within Park University’s current website design which can detract possible transfer students.

Credit Evaluation Implementation

As of the writing of this report, Park University does not currently offer credit evaluation services on their webpage. One of these well-known services is Transferology, a service offered by competing colleges such as UMKC. This resource allows transfer students to see where their currently earned credits will measure on their prospective university’s evaluation level, giving them an idea of how many more credits they will have to take until they receive their degree.

Advisory Procedural Overhaul

When it comes to the make-up of the advisors, also known as “Student Success Coaches,” there are some gaps that need to be filled. Below are the major issues present in the current system.

Student Success Coaches

Student Success Coaches are the first available resource for students looking to enroll in their courses. Once admitted to the university, students are assigned a Student Success Coach based upon their major or program of study. There are on average 6 Student Success Coaches available each academic year. These 6 advisors are currently expected to be knowledgeable and capable of enrolling students in courses that fulfill the requirements of their degrees. With over 58 major programs available to students, this is an insurmountable amount of information that coaches are expected to know.

Availability

Student Success Coaches currently hold too many cases to be able to know and understand the needs of the students they advise. In an academic study conducted by Stephanie Easterday titled “Academic advising: A study of the impact of academic advising on student satisfaction,” it was found that “students who are satisfied are more likely to continue their education and therefore be retained by the university” (Easterday, 2013). It’s also noted within the study that “students reported being most satisfied in the areas of level of ease when speaking with their advisors, their advisors knowledge of general education and university requirements, and their advisor’s availability when the student needed assistance” (Easterday, 2013).

Credit Evaluation

Transfer students in particular need an advisor to evaluate their earned credits and figure out what classes they still need in order to adhere to university requirements. When there is little access to advisors, and then advisors are unknowledgeable or enroll students in incorrect classes, transfer students can be put off from enrolling in the university. For Park University to continue to attract transfer students as well as encourage the growth of their enrollment rates, changes must be made within the advisory system that is currently presented within the Student Success Coach framework.

Conclusions and Recommendations

All of the research presented supports the decision to revamp the current online presence of Park University as well as procedural changes of the advisory systems in place. The online accessibility as well as advisory procedural changes criteria received favorable recommendations for a total of 80%. Together, policy overhauls have earned 80% based on the listed criteria. Therefore, I believe that Park University could see extensive growth in enrollment rates of transfer students. Optimizing the webpage for the

university as well as overhauling the current advisory system will allow for growth and accessibility to university information. To ensure enrollment growth, I recommend the following:

- Park University should reconfigure their online presence to be more accessible.
- Add clearly defined lists of requirements for enrollment.
- Advertise orientation events geared towards transfer students.
- Implement course evaluation programs into the website, as seen similarly at UMKC.
- Park University should overhaul their current fronting enrollment advisory program.
- Retrain enrollment advisors on necessary courses for degrees.
- Hire more staff for the Student Success Department to mitigate mistakes caused by overwhelming caseloads.
- Have regular meetings between advisors and department heads to ensure there is no confusion on requirements.

After one year, Park University should conduct a survey over the results shown by the implementation of these methods.

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A Comparison of the Hydrometallurgical Methods for Recycling Rare Earths in Permanent NdFeB Magnets

Malfalda Brás

Abstract

Rare Earth Elements (REEs) are currently very popular in various industrial applications, including electronics, renewable energy technologies, and automotive systems. Given the increasing demand for REEs and the limitations of primary resource extraction, the recycling of NdFeB magnets emerges as a crucial strategy to ensure a sustainable approach. Since hydrometallurgical techniques are the most prominent for recovering REEs from NdFeB magnet scraps, various hydrometallurgical processes from five studies were compared and analyzed according to their efficiency and environmental sustainability. Several leaching methods were evaluated, including leaching with HCl and selective leaching involving oxidation or chlorination roasting. The latter methods showed promise due to their high REE recovery rates and reduced environmental impact compared to strong mineral acids like HCl. For separation techniques, solvent extraction and oxalate precipitation were investigated. While solvent extraction demonstrated high efficiency, concerns about sustainability arose due to the use of mineral acids. In contrast, oxalate precipitation followed by calcination offered a more environmentally friendly approach with impressive REE recovery rates. Moving forward, continued research will be necessary to improve the effectiveness of these techniques and optimize them for implementation on an industrial scale.

Introduction

Rare Earth Elements (REEs) are currently very popular in various industrial applications, including electronics, renewable energy technologies, and automotive systems. Constituted by 17 chemically similar metallic elements, including 15 lanthanoids, scandium, and yttrium, these elements are relevant to us due to their unique properties. These properties include magnetic, conductive, phosphorescent, catalytic, electrochemical, and luminescent characteristics, making them useful when alloyed, or mixed, in small quantities with more common metals (Ramprasad et al., 2022). The demand and dependence on REEs creates pressure on their ongoing extraction from geological primary resources, ores, which does not solely meet the demand. As a result, a sustainable supply approach is required, which can be accomplished through recycling. Nevertheless, less than 1% of the REEs were being recycled in 2011 (Binnemans et al., 2013), and current REE recycling is still minimal, largely due to economic issues (Fujita et al., 2022).

Permanent NdFeB magnets are the most promising materials to be recycled among the principal applications of REEs, which include permanent magnets, nickel metal hydride batteries, and lamp phosphors. In 2020, their manufacturing accounted for about 80% of the economic value of REEs (Fujita et al., 2022). These magnets can be found in several everyday consumer products, such as hybrid and electric vehicles, wind turbines, and hard disk drives. More than an economic benefit, recycling NdFeB magnets is advantageous over other applications due to the specific REEs that can be recovered from this material. NdFeB magnets are based upon neodymium-iron-boron alloys, with a matrix phase of Nd₂Fe₁₄B. These magnets are not only surrounded by a neodymium-rich grain boundary phase, but they also include minor admixtures of praseodymium (Pr), gadolinium (Gd), terbium (Tb), and, most notably, dysprosium (Dy). Three of the five critical REEs identified by the U.S. Department of Energy (DOE) in 2011 are present in NdFeB magnets (Nd, Tb, and Dy) (Binnemans et al., 2013). Moreover, Nd and Dy are considered the most important REEs to clean energy, as well as the largest supply risk, implying that these elements require the most care and need for recycling.

The three primary material flows that can be considered for recycling NdFeB magnets are pre-consumer magnet swarfs from manufacturing, end-of-life small magnets, and large magnets used in hybrid, electric vehicles, and wind turbines. Direct recycling and reuse in their current form and shape are only possible for large magnets, making it difficult to recover REEs from the end-of-life small consumer magnets in electronics. In fact, even the first process is difficult to execute because large magnets remain in use for lengthy periods of time and are rarely available as scrap materials. For this reason, other appropriate methods that require pre-processing of magnet alloys are necessary for the recovery of significant concentrations and quantities of REEs, as well as for a cost-effective collection.

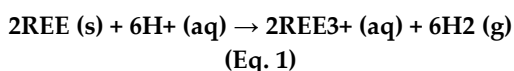
Out of several methods that have been researched on a lab scale, hydrometallurgical methods have emerged as the most prominent for recovering REEs from NdFeB magnet scraps because they can be used to treat any type of magnet and follow similar steps as the extraction of REEs processes (Zhang et al., 2020). As a result, this review provides an analysis and comparison between recent hydrometallurgical methods for recycling permanent NdFeB magnets that have been developed during the last 8 years. It considers the methodologies and findings, as well as their respective strengths and weaknesses. Through this examination, this review aims to identify the most effective and sustainable method poised for potential standardization and commercial adoption in future recycling practices.

Experimental Section

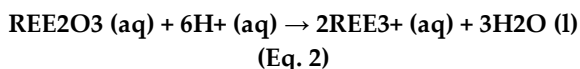
Hydrometallurgical methods are characterized by aqueous-based processes, allowing for the dissolution, separation, and recovery of Rare Earth Elements (REEs) from NdFeB magnet scraps. REE processing has two main steps: leaching and separation (Fujita et al., 2022). Out of the five studies being reviewed, all developed their own hydrometallurgical processes based on these two steps with the objective of not only finding the optimal conditions to achieve the best percentage recovery of REEs, but also developing environment-favorable alternatives. Each study will be described and compared methodologically, including experimental conditions, reagents, and mechanisms, so that its results can be understood and explored further.

Leaching

The leaching process is characterized by the dissolution of Rare Earth Elements (REEs) in the NdFeB magnet scraps into the aqueous phase. This dissolution method can be performed in two different ways: complete leaching and selective leaching. Parhi et al. 2016 was the only study being reviewed that used the complete leaching approach. The process consisted of completely dissolving a scrap permanent magnet sample using 0.2 M HCl, a strong mineral acid, at 90°C for 2 hours. Equation 1 shows a simplified mechanism for this reaction, illustrating how the HCl acid, represented as dissociated hydrogen cations (H⁺), leached the REEs, including Nd and Pr. Beyond REEs, the final leach liquor which also contained Fe and B, was filtered, diluted, and analyzed to determine the four element concentrations.

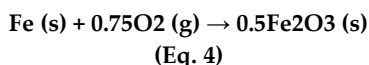
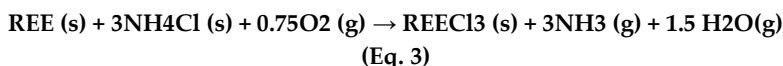


The other four studies utilized a selective leaching approach, taking advantage of the solubility between REEs and Fe. Different types of roasting were carried out as pretreatment processes in the studies of Gergoric et al. 2018 and Kumari et al. 2021 to improve selectivity and efficiency in the leaching method. Gergoric et al. 2018 carried out a pretreatment heating by oxidation roasting NdFeB magnet powder at 400°C for 1.5 hours. During this thermal oxidation process, the readily soluble REE₂O₃ (REE = Nd, Pr) and insoluble Fe₂O₃ were formed to prevent the leaching of Fe in acidic solution. The leaching process was then performed using organic acids (harmless lixiviants compared to mineral acids like HCl) such as maleic, glycolic, and L-ascorbic acids, following the simplified mechanism shown in Equation 2.



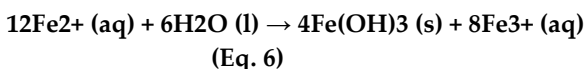
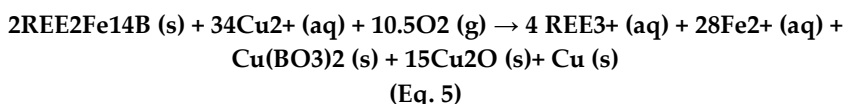
After the optimum leaching conditions were found for each organic acid, maleic acid was the most efficient lixiviant (Gergoric et al., 2018). Therefore, the REE recovery of NdFeB magnets was found for 1 M maleic acid at room temperature (25°C) and 1/80 g/ml solid/liquid ratio.

Aiming to avoid the use of acids throughout the leaching process, Kumari et al. 2021 carried out a chlorination roasting of NdFeB magnet powder from a wind turbine with ammonium chloride (NH₄Cl) at 300°C for 3 hours. Throughout this process, it was found through thermodynamic investigation that when the NdFeB magnet is roasted with 3 times the stoichiometric requirement of NH₄Cl, rare earths (REE = Nd, Pr, Dy) are selectively converted to REECl₃ (Equation 3) and Fe is oxidated to form Fe₂O₃ (Equation 4).



REECl₃ was readily soluble in water, but Fe₂O₃ was insoluble, hence water leaching was performed at 95°C for 1 hour and the leach liquor was separated from the leach residue by filtration (Kumari et al., 2021).

Like Kumari et al. 2021, another acid-free selective leaching process was carried out in the studies of Prodius et al. 2019 and Prodius et al. 2020. However, this time, preprocessing through roasting was not required. Both studies performed selective leaching of NdFeB magnets through redox-dissolution with copper(II) salts, as described in Equation 5. During this process, Fe²⁺ was also oxidized to Fe³⁺ (Equation 6), so that it could be further easily precipitated as a Fe(III) hydroxide in the separation step.



The comparison between REE recovery from NdFeB magnets via the proposed acid-free leaching process and the general acid-based leaching process (Gergoric et al., 2018) is represented in Figure 1.

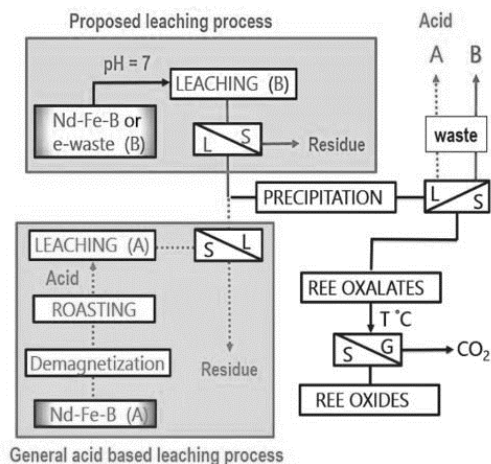


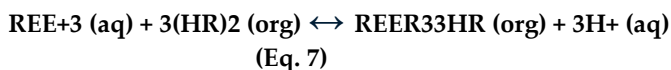
Figure 1
(Prodius et al., 2019).

While the feedstock material used for Prodius et al. 2019 was NdFeB magnet swarfs, decrepitated magnets from HDDs, and magnets from electronic waste, Prodius et al. 2020 focused only on NdFeB magnets from electronic waste. For this specific study, copper(II) chloride dehydrate was used to dissolve the magnet at room temperature (25°C) for 24 hours.

Separation

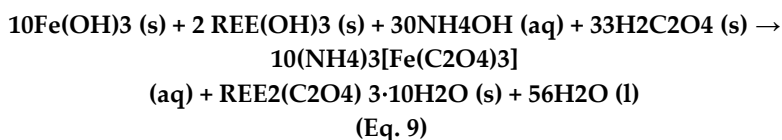
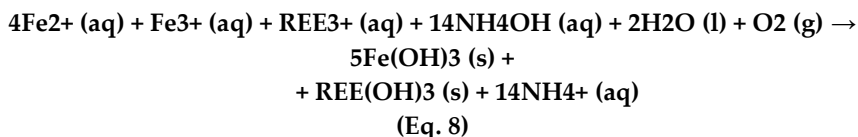
Once the Rare Earth Elements (REEs) and other co-solubilized constituents have been extracted into the aqueous phase as a leaching liquor, the liquid should be treated using separation techniques to separate REEs from non-REEs, followed by further separation of individual REEs. Solvent extraction (SX) and precipitation were the main separation methods used in the studies being reviewed.

Parhi et al. 2016 and Gergoric et al. 2018 carried out a solvent extraction method for the selective separation and extraction of Nd and Pr with a water-immiscible organic reagent. Since Fe had already been removed from the leaching liquor in Gergoric et al. 2018, only Parhi et al. 2016 required Fe removal by precipitation using lime water (Ca(OH)₂) prior to SX. Both studies used D2EHPA (di-(2-ethylhexyl)phosphoric acid) as an acidic extractant for the extraction of REEs, which followed the ion exchange mechanism shown in Equation 7, with HR representing D2EHPA.

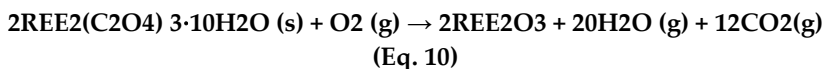


To form the organic phase, also known as the solvent, the extracting agent needed to be dissolved by a diluent. While Parhi et al. 2016 used H₂SO₄/NaOH as a diluent, Gergoric et al. 2018 tested several to find the most efficient, including alcohols (1-octanol), ketones (cyclohexanone), and alkanes (pentane, hexane, dodecane, and solvent 70 - hydrocarbons C₁₁– C₁₄, < aromatics). The final optimal conditions found for the solvent extraction process in Parhi et al. 2016 was using 0.8 M D2EHPA 30% neutralized by H₂SO₄/NaOH at pH 4.0. For Gergoric et al. 2018, solvent extraction was performed using 1.0 M D2EHPA dissolved in pentane.

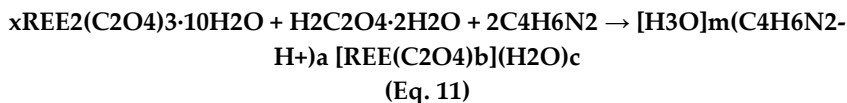
Separation by precipitation was carried out in the studies by both Kumari et al. 2021 and Prodius et al. 2019. After chlorination roasting and water leaching, Kumari et al. 2021 treated the leaching solution with oxalic acid (H₂C₂O₄) at pH 2 to produce hydrated rare earth oxalate precipitates (REE₂(C₂O₄)₃·10H₂O) leaving other impurities like Al, B, Co, and Fe in solution. Prodius et al. 2019 performed a similar oxalate precipitation process, but due to its leaching solution being composed of both REE and Fe cations, precipitation of Fe(III) and REE(III) hydroxides had to be performed prior, using an aqueous ammonia solution (28%) (NH₄OH) at 60°C for 2 hours (Equation 8). For the oxalate precipitation to occur, excess of solid crystalline oxalic acid (H₂C₂O₄·2H₂O) was added at 80°C until insoluble REE oxalate precipitated and highly soluble double salt of iron-ammonium oxalate formed (Equation 9).



To obtain a final mixture of recovered rare earth oxides (oxide of Nd, Pr, and Dy), Kumari et al. 2021 and Prodius et al. 2019 lastly carried out a calcination of the mixed REE oxalates in air at 800°C (Equation 10). This process consisted mainly of heating the inorganic material under a controlled temperature and environment so that volatile components could be removed.



Following the same leaching treatment as in Prodius et al. 2019, Prodius et al. 2020 developed a new separation method aiming for a more environmentally friendly and cost-effective approach. The method is known as CSEREOX, which stands for “chemical separation of rare-earth element oxalates”. It involves the selective reaction of water-insoluble rare earth oxalates with an aqueous mixture of oxalic acid and organic base, separating light and heavy rare earths due to different solubilities. The lighter elements (LREEs) which include La-Sm are much less soluble than the heavy elements (HREEs) which include Gd-Lu, meaning they can precipitate first. Equation 11 shows how the CSEREOX extraction method was performed for the separation of Nd and Pr (both LREEs) from Dy (HREE), by adding oxalic acid, 1-methylimidazole as a base, and water as a solvent to the rare-earth(III) oxalates obtained from the oxalate precipitation for 15 minutes.



Where $x = 0.01/1.6$; $m = 0$ or 1 ; $a = 1, 3, 4, 5, 8$; $b = 2, 3, 4, 7$; $c = 1, 1.5, 2$ and 10 .

Results and Discussion

All five studies showed reasonable results regarding the leaching and separation of Rare Earth Elements (REEs) from NdFeB magnets. More than just effective, several methods encountered environmentally friendly alternatives which are feasible to be further performed for industrial scale recycling. The complete leaching using HCl (Parhi et al., 2016), the selective leaching involving oxidation roasting and usage of maleic acid as a lixiviant (Gergoric et al., 2018), and the selective leaching involving chlorination roasting and water as a lixiviant (Kumari et al., 2021) were the most effective leaching methods for the recovery of REEs in leaching aqueous solution (>90 %). Even though HCl leaching had the highest REE recovery (99.99 %), this process had some significant drawbacks regarding sustainability compared to the others. The usage of strong inorganic acids like HCl lead to poisonous gas evolution during leaching (H₂) which can be challenging during handling and has adverse impacts on the environment due to the consumption and discharge of large amounts of acid (Gergoric et al., 2018). It is estimated that treating 1000 kg of NdFeB magnet requires 1622 kg of HCl (over 1.6 times the mass of the magnet) (Kumari et al., 2021).

Due to this environmental issue, both studies of Gergoric et al. 2018 and Kumari et al. 2021 performed a more environmentally friendly approach

aiming to potentially decrease and replace the usage of strong mineral acids in the hydrometallurgical recovery of REEs. Kumari et al. 2021 showed a slightly higher recovery of REEs (99%) than Gergoric et al. 2018 (96%). Moreover, the chlorination roasting using NH_4Cl prior to leaching (Kumari et al., 2021) was found to be a more energy-efficient process than oxidation roasting (Gergoric et al., 2018) because it was performed at a much lower temperature and over a shorter time. For this reason, the selective leaching of REEs involving chlorination roasting and water leaching seems to be the selective method with the most effective and sustainable characteristics for the recycling of REEs from NdFeB magnets. The acid-free selective method performed in Prodius et al. 2019 and Prodius et al. 2020 looked promising due to its environmentally-friendly approach, but no explicit data of the REEs recovery in leach solution was presented in either study.

Regarding the separation methods, the solvent extraction with D2EHPA as the acidic extractor and $\text{H}_2\text{SO}_4/\text{NaOH}$ as the diluent (Parhi et al., 2016) and the oxalate precipitation using oxalic acid followed by calcination (Kumari et al., 2021) were the most effective methods for the extraction of REEs from the leach liquor (>95 %). Despite the high efficacy of 99% recovery of a Nd and Pr mixture in the solvent extraction performed in Parhi et al. 2016, like its complete leaching method, environmental issues associated with the usage of mineral acids (H_2SO_4) and the generation of large amounts of waste limit this procedure feasibility in an industrial scale. Moreover, this process was unable to extract Dy, an important critical rare earth component of NdFeB magnets.

The separation method performed in Kumari et al. 2021 allowed for the extraction of 96% Nd, 98% Pr, and 98% Dy from the leach liquor as a mixture of REE oxides. Not only was the recovery of Nd and Pr high, but the process also permitted the high recovery of Dy. The only drawback of this process was the high temperature in which the calcination needed to occur, a high-energy process. The CSEREOX route performed in Prodius et al. 2020 was able to extract Dy with a lower efficiency of 68%, but still developed an energy-efficient approach, with water as the only extraction media, contributing to less hazardous chemical synthesis. This is a promising sustainable approach for the separation and extraction of REEs from NdFeB magnets, but further studies need to be done in order to improve the efficacy of this new technique. Therefore, based on efficacy and lower environmental issues, the oxalate precipitation followed by calcination performed in Kumari et al. 2021 seems to be the best approach for the separation and extraction of REEs. The complete process for the recovery of mixed rare earth oxides from 100g of NdFeB magnet followed by Kumari et al. 2021 can be seen in Figure 2.

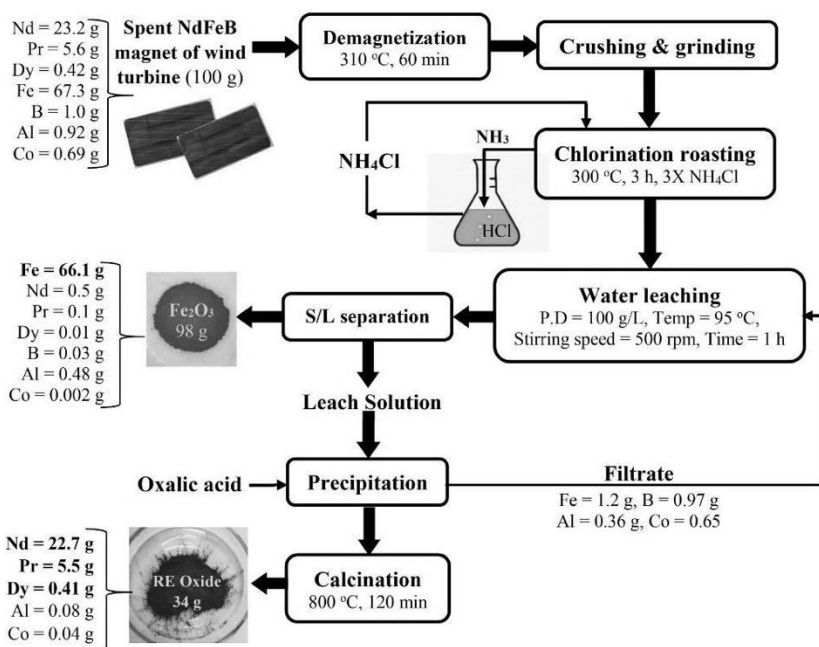


Figure 2
(Kumari et al., 2021).

Conclusion

In conclusion, the comparison of hydrometallurgical methods for recycling rare earth elements (REEs) from permanent NdFeB magnets reveals significant progress and potential developments toward sustainable recovery. With the rising demand for REEs in various industrial applications, recycling NdFeB magnets emerges as a crucial strategy to mitigate supply constraints and reduce environmental impacts.

The reviewed studies showcase diverse approaches to leaching and separation processes, each with its advantages and limitations. Complete leaching using HCl demonstrates exceptional REE recovery but raises concerns about sustainability and environmental impact due to the use of strong mineral acids. On the other hand, selective leaching methods, particularly chlorination roasting followed by water leaching, offer promising results with high REE recovery rates and a reduced environmental footprint. In terms of separation techniques, solvent extraction and oxalate precipitation emerge as effective methods for extracting REEs from leach liquors. While solvent extraction exhibits high efficiency, concerns regarding environmental sustainability persist due to the use of mineral acids. In contrast, oxalate precipitation, followed by calcination, offers a more environmentally friendly

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approach with impressive REE recovery rates. The adoption of acid-free selective leaching methods and environmentally friendly separation techniques underscores a growing emphasis on sustainability in REE recycling. However, further research is needed to improve the effectiveness of these techniques and optimize them for implementation on an industrial scale.

Moving forward, continued innovation and collaboration will be essential to address the challenges and maximize the potential of REE recycling from NdFeB magnets. By prioritizing sustainability and efficacy, these methods can contribute to a more environmentally responsible and resilient supply chain for REEs.

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How Can Residential Designs Create Spaces That Are Environmentally Smart: A Literature Review

Abby McLaughlin

Introduction

Sustainability has become a trending word in several different fields. As interior designers, we have the ability to contribute to impacting the environment with sustainability. Not only are smart designs focusing on how to solve problems for clients, but they are also starting to focus on how to solve the environment's problems. Interior designers can do this by choosing energy-efficient appliances, being conscious of material/product selection, knowing the life cycle of the design choices, and educating the end users. Designers should make a conscious choice to find responsible materials and products, lower waste by reusing or recycling, and strive to be cognizant of the health of their clients and the environment. The need to lower carbon footprints is an important movement for the environment. Lowering a carbon footprint focuses on decreasing emissions and pollution while also being concerned with energy consumption. A big part of lowering one's environmental impact is consciously choosing the appliances and products that are used in design choices. It has become a global effort to understand the energy usage in a space and reduce any unnecessary emissions. This information can allow for the lowering of a design's carbon footprint which can lower costs to the client.

Sustainable material and product selections go further than just color, aesthetics, and usage. Interior designers can go as deep as understanding the impact of processing and the cost of energy in extraction, handling and refining, overall processing of products, transportation, life cycle, and possible disposal. Awareness of the process and factory policies can aid designers when deciding on environmentally smart products. Environmentally friendly products can support designers and end users in sustainable practices.

Interior designers can practice an important aspect of sustainability by teaching the clients how their homes can become more environmentally safe while also saving money. This can be done through the use of energy-efficient appliances, LED lighting, window and door selections, and smart home tools. The use of energy-efficient appliances can help lower the power and maintenance needed. Next, we look at how material and product selection can affect the environment overall.

Significance

The significance of this paper is to describe the importance and benefits of sustainable practices in the residential design process. First, we will analyze how energy-efficient choices can help lower the carbon footprint and be financially profitable for the homeowner. We will also look at ways we can create energy efficiency in designs, and how to make the home function for us through the internet of things, with the internet of things being technology used in the home that communicates through sensors or devices (Hu et al., 2020). In the second section of this paper, we look at how material or product selection can benefit the design process. Lastly, we look at how we can take what we learn as interior designers and use it to educate homeowners to spread sustainable practices in everyday life choices.

Energy Efficiency

One way an interior designer can be environmentally smart is to look at the energy efficiency of the house. There are numerous ways a house can become energy efficient. Selecting household appliances that have built-in technology to save energy is a major way to create a sustainable home. Other ways to create energy efficiency is through proper windows or using household accessories known to save energy. These accessories can include LED light sources and smart technology like sensors or virtual assistants.

Looking at energy efficient appliances, an easy way to classify if the appliances are effective in lowering carbon footprint and costs to the consumer is by looking at the Energy Star Rating. An Energy Star Rating is administered by the U. S. Environmental Protection Agency. As quoted from their website,

“Since 1992, Energy Star and its partners have helped American families and businesses:

- Save 5 trillion kilowatt-hours of electricity.
- Avoid more than \$500 billion in energy costs.
- Achieve 4 billion metric tons of greenhouse gas reductions (U.S. Environmental Protection Agency, n.d.).”

Energy-efficient appliances have been shown to make a huge impact in lowering the carbon footprint of a household. According to a study by Hossain et al. (2022), “Increasingly, household appliances are the primary source of energy consumption and CO2 emissions. According to the International Energy Agency IEA (2017), the residential sector consumed approximately 21% of total global consumption in 2017.” Energy-efficient appliances have the ability to use less water, can use less energy through gauging load size, and can assess soil levels. This is important because the

appliances can tell how much water is needed, possible water temperatures, and the length of load wash time.

There is concern about the limitation of smart energy appliances, materials, or accessories to the majority of the world. Middle- to lower-income residences and developing countries lack the ability for these upgrades (Talele et al., 2018). This is becoming less of an issue as energy-efficient appliances are becoming more accessible and prices are lowering.

Another added benefit of using energy-efficient appliances is that they are being created to fit the internet of things movement and smart buildings. This movement details how objects within the home can link up, create routines, and work on an overall system that benefits the homeowners. As noted by Hu et al. (2020), “These systems not only enhance the occupants’ accessibility, security, and control over interior environments but also aim to boost productivity and user comfort levels.” Small home appliances that can be installed to fit the internet of things are room sensors for temperature, smart thermostats, light bulbs, smart plugs, and more. Added benefits that the internet of things can provide are extra security and safety measures. There are ones that can specify if an elderly adult has fallen and can automatically call for help (Hu et al., 2020).

In a research study conducted by Ashour and Rashdan (2023), the use of technology in a residential capacity was analyzed to see what the benefits were for interior design. The article discussed the value of an interior designer to be able to create spaces that are adaptive and functional through the use of technology. Looking at the intelligence of the home, commonly known as a smart home, it has trends where the aim is to create spaces that work for the occupants by learning behavior and needs. In time, the prediction of needs can take place and be implemented through lighting, heating and cooling, as well as security. Using the internet of things can add to “resource conservation on a global scale, promoting environments that are healthier, beneficial, and comfort-enhancing” (Ashour & Rashdan, 2023, p. 40). Through the usage of smart devices, the homeowner can create routines that can turn lights on and off at certain times of the day. The homeowner can also set up temperature sensors in rooms that can link to the HVAC and thermostat. This technology can learn the behaviors of occupants and create routines that will help lower energy consumption.

Another way to help the energy efficiency of a design is the usage of windows to improve natural lighting. Natural lighting has two main benefits in design, with the first being a mood stabilizer, as it offers a biophilic concept to a design. The second benefit is that it can lower the cost and energy output of a residence. Both of these concepts can also, in turn, add to the longevity and life cycle of the building design.

Using natural lighting through windows can help add a sense of calm. Humans seek to be connected with the outside world and have views of nature. It also can help with maintaining a sense of time progression and viewing weather changes. According to Isopescu et al. (2024), the benefits of natural lighting on an individual are “its impact on mitigating depression, with morning light demonstrating twice the efficacy compared to evening light. Additionally, natural light has been observed to influence the duration of hospital stays, reduce stress levels, and alleviate pain among occupants. These findings underscore the multifaceted health benefits associated with exposure to natural daylight within built environments.”

The usage of natural lighting during the day reduces around 75 percent of lighting energy output for the home (Danpal, 2020). This is because artificial lighting produces heat which, in turn, can change the temperature of the space. Adding heat to a space causes a chain reaction that includes the simultaneous running of an HVAC system to create a comfortable temperature in the space. The utilization of natural lighting can help improve the needed energy consumption of a house. In some places where extreme heat or cold temperatures take place, a balance must be created to help counter heat gain or loss. This can be countered through the use of glazing windows and window treatments. The use of shutters or blinds on the outside of a residence has also been effective in improving the temperature gained through windows.

Another way to increase the energy efficiency of a residence with the use of natural lighting is to orient the home to the sun’s compass (Danpal, 2020). This means putting as much window surface as possible to match the pathway of the sun. In America, the sun rises in the east and sets in the west. It also stays on the south side of the buildings. So, the addition of windows on the south side of a building can create more natural lighting. Sunroofs and window wells are also utilized to help create more natural lighting in a space.

Material and Product Selection

Material and product selection can be one of the most important jobs we do as interior designers because it has the biggest impact on the design and even the world. As interior designers, we have to think about where these products or materials originally come from. Is the material made out of recycled material that helps lower landfills? Is the material sourced from locally grown products such as wood or wool? Is an entire ecosystem being affected by the selection of this product? As designers, we need to be conscious of how the design impacts the environment.

In a research study conducted by Marsahala et al. (2022), the use of recycled plastic is analyzed in the effects of its design quality. Due to the

environmental impact plastic has, this study values the importance of finding other ways the raw material can be effectively used. This article highlights the benefit of reusing waste as it reduces landfills and adds to the lifespan of the material. Recycled plastic can be mixed with raw materials which add to the characteristics of the overall product, adds to longevity, and can increase the performance of the object. The benefit of using recycled plastic in creating a new product is the ability for the material to be melted down and shaped into new forms. It is easily molded and can add to the rub resistance and water/stain proofing.

As interior designers, we need to be conscious of the longevity of the material or products. We also need to be conscious of the pricing, performance, and safety. Sustainable fabrics are low or free in Volatile Organic Compounds, VOC's. This adds to the longevity and overall health of the design as it does not put out any toxic or strong odors. We also need to be aware if the fabric is next to a heat source or is a fire liability. Does the material have a colorfast tendency, or does it fade quickly? Knowing the material's characteristics can help ensure the proper use in order to gain a longer life span.

Vân Nguyen (2018) describes the importance of understanding a material and the role it takes economically and environmentally, which they demonstrate through their knowledge of bamboo. Vân Nguyen (2018) calls for interior design to merge with sustainable architecture by focusing on the materials sourced in order to create a responsible environment. This article explains how bamboo is one of the leading sustainable materials because of its natural ability to grow fast, its abundance in developing countries, and bamboos innate ability to absorb massive amounts of carbon dioxide. Bamboo has also been discovered to be a gentle material comparable to cotton. Vân Nguyen also highlights how bamboo does not harm the environment from harvest to disposal, which is an overall goal that sustainable materials should be concerned with. This article demonstrates the importance of knowing the background and characteristics of a raw material. In understanding these concepts, interior designers can make a more educated decision on a sustainable material that is healthy for the planet and homeowners. Knowledge of materials also enables the ability to find a material source that can withstand its intended use and have longer value in the design.

He (2022) stated in their article "Application of Ecological Environment Materials in Interior Design" important concepts to pull an ecologically smart design into practice. The first is that designers need to think about the ecological impact their choices have on the environment. The second is how designs need to value health principles to ensure well-being both mentally and physically. This is through indoor air quality, lighting, temperature, and humidity following the needs of human standards. A third

concept acknowledged in this paper is if the cost of the product is valued in terms of longevity and impact. This is for both the interior space as well as the overall well-being of the environment. The design needs to analyze how the materials can alter the balance of the ecosystem. Some materials are harder to renew, while others take a long time to be broken down in the natural world. Lastly, this article looks at how to optimize the design's impact by reducing waste, supplanting harmful substances, avoiding pollution, utilizing natural energy sources that are renewable, and optimizing the resources being used. In doing so, designs become active in creating a green environment.

He (2022) states that "Human-attributed ecological design includes two aspects. One is that the designer should establish an awareness of environmental protection based on the ecological concept, save natural resources as much as possible, and produce less garbage (garbage in the broad sense)." Designers should always consider the impact design has on the environment and the responsibility of choosing materials that are ecologically smart. Designers should also focus on lowering the amounts of garbage. Being mindful of waste in construction or renovation projects can make an impact on the environment. It is also important to discuss donating, reselling, or recycling old furniture with homeowners. This will help lower the household items or materials being thrown in landfills. Spreading knowledge can make a lasting impression on designs.

He (2022) further develops these concepts by finding how to use passive indoor space planning, such as indoor ventilation and daylighting, to help work with the climate and environment. Another thing to consider when creating a healthy space is to be aware of how the density in materials can either increase or decrease auditory stressors. Porous materials will absorb high-frequency sounds. Another way materials can better serve a design is through thermal insulations. There are energy-saving wall materials that work with the building structure and thermal performance. Keep in mind the insulation should not put off harmful pollutants. For example, straw walls are thermally efficient by being passive in hot and cold temperatures. Straw walls also have an inherent fire resistance.

Looking at the environmental impact in an ecosystem and interior space continues to be developed in this article because of its analysis of furniture design. The manufacturer and the use of the furniture should not create pollution. It should use resources and energy responsibly and take into consideration the ecological cycles involved. This also considers the post-maintenance and servicing of the furniture. An example would be furniture made from bamboo. The material is quick to grow, which makes it easily renewable. It does not put out any volatile organic compounds (VOCs),

reducing the harm caused by pollutants. It is strong and tough in nature which allows it to replace other materials used in furniture making. Using materials that closely represent outdoor landscaping has also shown to have psychological benefits (He, 2022).

For example, putting plants in interior spaces can enrich color and soften a design. Plants are known to clean air and can help maintain humidity levels. Also, plants have been shown to improve work efficiency, body, and mind (He, 2022). This article expresses the occurrence of how indoor spaces and outdoor environments becoming blurred in designs and importance. It calls for the need to find balance. This balance can strive to keep the health of both the ecosystems and environments, along with humans and their interior spaces.

He (2022) states that “The purpose is to find materials that have the lowest environmental burden, purification, and restoration of the environment in the process of processing, extraction, preparation, use and regeneration. The adjustment of the current material industry structure to the development of reasonable resources, emphasizing the harmonious coexistence of man and nature, and meeting the needs of human survival and development (p. 3950).

Educating Homeowners

One way interior designers can make the most improvements in designing a space with sustainability in mind is through the education of homeowners. Allowing the homeowners to be part of the product selection process can help them understand why some choices are smarter economically and can help the environment. Engaging in discussion with the homeowners will help in being aware of how choices can both improve the homeowner’s financial standing and benefit the environment in the long term. Building and strengthening knowledge will create a mindset to improve sustainability.

In a study conducted by Blasch et al. (2022), educating the consumers on the importance of balancing the upfront cost of the appliance in relation to the life cost of running the appliance can help relieve stress in making a choice in purchasing. Energy consumption would be lower if consumers were educated in lifetime cost calculations on appliances and lighting options. This study also suggests using the internet as a tool for cost calculators and education programs. In the end, this can help empower consumers to make decisions that are financially and economically better (Blasch et al., 2022).

Another study conducted by Moore et al. (2017) showed that a higher NatHers star rating of 8.2 would benefit the homeowners financially, as well as their overall health. NatHers is a national rating of house energy efficiency in Australia. There is a setting requirement that calls for a minimum standard of efficiency of 6. The study discusses the importance of showing homeowners the benefits of putting more money down up-front toward upgrades to solar panels, hot water heating pumps, and better thermal barriers in the home

(insulations and glazing windows). The savings could be up to \$45,000 over a 20-year period. This is because of the significantly lower cost of utility bills. The homeowners can also rest easier knowing that they are making an impact in lessening greenhouse emissions (Moore et al., 2017).

Conclusion

Interior designers need to be aware of how their choices can impact the environment. One of the biggest impacts can be through the use of appliances. Lowering the carbon footprint of a residential home through the use of energy-efficient appliances can help save money and increase savings on utilities, benefiting both the environment and the economy. Also, energy intake can be lowered through window selections, lighting choices, and utilizing the internet of things. Combining techniques of energy-efficient appliances, materials, and technology can make huge economic impacts if one is intentional in selections during a design process. Material selection and the life cycle of products can also help create longevity in design elements. Design longevity can help in increasing global health. Interior designers need to strive to include the homeowners in all choices in order to help educate the impact that a sustainable design can have on the environment. Knowledge can also help alleviate stress for the homeowners by being better equipped to make choices that have a financial and environmental impact. The knowledge impact does not only benefit the homeowners, but also local communities and globally. Sustainable practices should be a priority for all choices in the design process because they are important for both the environment and the end users of the residence.

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The Home as Self-Expression: Navigating Identity and Marketplace Pressures in Interior Design

Karla Ramos

Introduction

A client's identity, shaped by personal style, cultural background, and lifestyle, significantly influences interior design and renovation choices by impacting aesthetics and functionality. Resources such as budget and time further constrain these decisions, requiring clients to navigate a marketplace that reflects their values and constraints. As Grant and Handelman (2022) state, "Consumers expend great amounts of time and money drawing on the marketplace in acts of self-expression that align one's home configuration with one's unique identity" (p. 882). Thus, understanding the intersection of client identity and resources enables designers to create spaces that align with the client's vision while balancing personal expression and practicality. When the marketplaces that consumers turn to for self-expression through design begin to shape and limit their choices, the result can be a conflict between personal identity and external standards. Grant and Handelman (2022) state in their publication "Dysplacement and the Professionalization of the Home":

Traditionally, the home is regarded as a palace of singularization that is to be aligned with the homeowner's unique identity. This traditional meaning has come to be confronted with a contradictory understanding of the home as a marketplace asset. Homeowners come to experience a market-reflected gaze that shuns singularization while driving homeowners to exhibit expertise in aligning their homes with marketplace standards. Professionalization of the home, through marketplace expertise of and standardization, discourages personalization, leading to an experience of disorientation with the place of home. (p. 882)

When the places consumers frequent for materials negatively influence their self-identity and design choices, it can lead to cognitive dissonance, as people struggle to reconcile their authentic values with the aesthetics of their purchases, possibly feeling conflicted. This dissonance can result in limited choices and reducing satisfaction and well-being, as consumers may feel their possessions fail to reflect their true selves, leading them to avoid misaligned shopping environments over time.

This alignment between one's home and one's unique identity is consistent with the idea that the walls of our homes "work like the clothing that covers our bodies; both are coded to enable us to articulate the various identities that we assume every day" (Lloyd & Johnson, 2004, p. 252). As individuals and families each have unique identities, the home is a critical space for self-expression and identity construction. A person's distinct identity is shaped by a combination of their experiences, beliefs, values, and physical and behavioral characteristics. In Bennett et al. (1988), as cited in Epp and Price (2008), family identity is the family's subjective sense of its continuity over time, its present situation, and its character. It is the gestalt of quantities and attributes that make it a particular family and that differentiates it from other families. Though every individual and family has their unique self-expression and identity, they all rely on the massive design marketplace to obtain the materials, decor, and assistance they need to mirror their identity to their home. With this awareness, marketplaces are the help that clients need to express their uniqueness, but also evoke a judgmental narrative that spurns expressive individual design.

Significance

The purpose of this study is to delve into how clients and families include their unique identity in their homes by utilizing marketplaces, and how those same resources create a market-reflected gaze into their personal home designs. First, we will explore when homes began to be more than just a place of shelter, home as a place of unique identity, and why making a home your own is important. Second, we will examine how self-identity is translated in home design: as consumption and identity, market influence on consumer choices, social status through consumption, balancing personal taste and social norms, and home as a reflection of identity. Then, researched-based evidence and examples will show how people are afraid of a market-reflected gaze that spurns the involvement of self-expression in a home. The information obtained in this study should inspire all present or future homeowners and all designers, professional or not, to not be afraid to express their unique attributes in their homes simply because they're afraid that their design will be judged or deemed worthless.

Literature Review

Several sociocultural dynamics contributed to the prevailing cultural conception of home in North America during the 20th century. Government and industry campaigns at the end of World War II reinforced the home as the center of the ideal American life (Cohen, 2003). Equipped with modern comforts, the independent suburban house was presented as a prize for families sacrificing everything during the war. Having a home provided the opportunity for personal growth for the average middle-class family. In the period following the war, interior design became the focus of domesticity

(Lloyd & Johnson, 2004). For homeowners, the house evolved into a material manifestation of their personality, way of life, and social standing. It became an extension of themselves.

As Epp and Price (2008) maintain, “Each family houses unique bundles of identities, including family’s collective identity, smaller groups’ (e.g., siblings, couples, parent-child) relational identities, and individual family members’ identities” (p. 50). A home has a multitude of identities within each room, whether through the individuals, or groups of people in a room, or pets, etc. Establishing a distinctive identity for a home is crucial, as it enables people to showcase their lifestyle, cultural background, and personal beliefs, fostering a feeling of emotional attachment and belonging. A house that reflects its individuality improves well-being, encourages coziness, and offers a place for self-expression. Customized houses may also make a statement in the community by indicating status and uniqueness and by providing practical solutions that suit requirements and tastes. In the end, it turns a house into a meaningful and contemplative space rather than just a physical building.

This literature review is categorized into five major topic areas relating to how self-identity is interpreted in home design: (1) Consumption and Identity (2) Market Influence on Consumer Choices (3) Social Status Through Consumption (4) Balancing Personal Taste and Social Norms and (5) Home as a Reflection of Identity.

Consumption and Identity

Consumption and identity in residential design refers to how decisions about the selection and application of materials, furniture, and spaces expresses individual preferences, morals, and social identities. These ideas have an impact on the practicality, aesthetics, and emotional bonds that individuals form with their living environments. Grant and Handelman (2022) note that “Engaging in home renovation consumption is an ideal context because such modifications of place may be considered an essential part of emplacement while simultaneously immersing the consumer in the home improvement marketplace” (p. 886).

Family Consumption and Identity Practices

Family identity is framed as something that is constructed and maintained through shared interactions among relational bundles within the family that engages in both complementary and competing consumption practices (Epp & Price, 2008). Families draw on these shared practices to manage and negotiate their collective identity as a unified household. Consumption, in this sense, involves both the physical use of resources and the symbolic meanings attached to them, such as traditions, rituals, and

routine behaviors that reinforce family connections and roles. In Wallendorf and Arnould (1991), as cited in Epp and Price (2008), generations connect through consumption rituals, such as viewing family photographs and storytelling, that anchor a family to its past. Shared consumption helps align individual, relational, and collective identities, which includes choosing products, services, or experiences that are emotionally meaningful to the family.

Personal Consumption and Identity Practices

Identity and personal consumption are closely related ideas, as a person's decisions about what they use, buy, or interact with reflects and molds their sense of self. Individuals frequently choose goods, labels, or fashions that complement their ideals, character qualities, and preferred social image. Arsel and Bean (2012) argue that tastes are not just individual preferences but are collectively influenced and organized through broader cultural and social forces. Furthermore, a **taste regime** is a socially constructed system that governs and shapes how individuals develop their aesthetic preferences, tastes, and practices within cultural or social groups. In Bourdieu (1984), as cited in Arsel and Bean (2012), taste has been frequently theorized as a mechanism through which individuals judge, classify, and relate to objects and acts of consumption. Advertising and media play a big role in shaping and keeping taste regimes. For example, in interior design, certain décor trends become popular because influencers and tastemakers promote them, helping people decide what to choose. Therefore, “A taste regime regulates acts of consumption by providing the teleoaffective structure of a practice that orders objects, meanings, and doings” (Arsel & Bean, 2012, p. 902).

Market Influence on Consumer Choices

The market plays a pivotal role in shaping consumer choices by driving preferences through trends, economic conditions, and the availability of materials. As consumers' tastes evolve and new technologies emerge, the dynamic nature of the market continually influences how people design and furnish their homes. The marketplace is particularly significant because “Consumers draw on the marketplace as part of their emplacement rituals of singularization, consistent with our cultural understanding of the home as a place to be aligned with the homeowner's unique identity” (Grant & Handelman, 2022, p. 883).

Madigan and Munro (1996) argue that media, particularly lifestyle magazines, play a significant role in shaping domestic aesthetics, influencing homeowners' design choices through idealized representations of beauty and style. These representations become physical manifestations, as “Shops and magazines often display fully coordinated sets of goods (furniture, carpets, fabrics, wallpapers, accessories) and design ranges with carefully matched and contrasting patterns and colors” (Madigan & Munro, 1996, p. 54).

Furthermore, the market plays a central role in shaping taste regimes, with market actors (brands, media, and marketers) influencing and regulating what is considered “good taste” and thereby structuring consumer preferences. This links with the concept of taste regimes because “Taste regimes are perpetuated by marketplace institutions such as magazines, websites, and transmedia brands” (Arsel & Bean, 2012, p. 889).

However, media, such as home renovation shows and magazines, increasingly push homeowners to see their houses not only as personal spaces, but as market assets. This idea creates tension between expressing individual identity and adhering to professional, market-driven standards like neutral color schemes, open floor plans, and high-end appliances. Homeowners often feel pressure to conform to these trends which can result in a sense of unease and “dysplacement,” where their home no longer fully feels like a personal space, but a commodity shaped by external expectations. Grant and Handelman (2022) explain that “This countervailing dynamic serves as a force of displacement in which consumers’ effort to align their homes with their unique identities are confronted by expectations to instead align their homes with marketplace standards” (p. 883).

Social Status Through Consumption

The term “social status through consumption” describes how people use the items they purchase—such as experiences, vehicles, clothing, or technology—to convey their societal position or status. Individuals frequently buy products and services to show off their income, taste, or social group membership and use them for practical purposes. A person may purchase a luxury vehicle or high-end apparel, for instance, to show their elevated social status, whilst another may choose environmentally conscious items to convey principles such as environmental stewardship, which can also be indicative of a certain social status. Madigan and Munro (1996) explore how social status is expressed and reinforced through home decoration and consumption. They argue that the home as a key site of consumption is often used to project and communicate social standing, taste, and identity.

Furthering this, “Taste regimes regulate lateral distinctions between economic strata by setting apart the styles, preferences, and dispositions of one middle-class group from another, but they also link to consumption patterns so that individuals can habitually enact these distinguishing mechanisms” (Arsel & Bean, 2012, p. 902). An individual’s taste is not just a personal preference but is shaped by social forces, and people often align their consumption with socially accepted norms to express status. Arsel and Bean (2012) suggest that the endorsement of tastemakers (like influencers or critics) helps define what is considered “high status” or desirable, and consumers

adopt these choices to signal their place in the social hierarchy. In essence, by adhering to or rejecting certain taste regimes, individuals use their consumption as a tool to navigate social status and establish their identity within a specific social context.

Bourdieu (1984) argues that people use taste and consumption practices to create social distinctions. Individuals from higher social classes consume specific goods and engage in cultural activities that separate them from lower classes. For instance, they might prefer fine art, gourmet food, or classical music, which are viewed as symbols of status. In contrast, "Lower income households are less likely to buy new furniture at all relying on second-hand purchases and hand-me-downs" (Madigan & Munro, 1996, p. 44). People's tastes, shaped by their class background, serve as markers of social status, helping to distinguish and reinforce their place in the social hierarchy.

Balancing Personal Taste and Social Norms

People often experience a subtle tension when making choices in areas like fashion or home design. These decisions involve a careful balance between expressing personal identity and aligning with societal norms or trends. Personal taste is a person's preferences and way of expressing themselves, while social norms are more inclusive cultural or commercial standards that influence how decisions are perceived by other people. As Grant and Handelman (2022) explain:

When consumers engage in alterations to their homes, whether the alteration is an act of asserting home-unique identity, or one that aligns the home with marketplace standards, consumers reflect on the judgment that will be cast on their home. These judgments may be observed in media portrayals, they may come from one's friends and family members, from marketplace professionals such as real estate agents, contractors, and designers, or from the consumer anticipating the judgments from a marketplace person. (p. 899)

Arsel and Bean (2012) argue that people often align their consumption with socially accepted norms to fit in or signal their status within a particular group. Also, tastemakers, such as influencers, designers, and critics, play a key role in shaping the tension between personal taste and social norms. Tastemakers define what is "trendy" or "high status," but individuals still have the freedom to interpret these trends in ways that align with their identities. This idea, for instance, emphasizes how homeowners may feel compelled to adopt current design trends, such as open floor plans or neutral color schemes, even when they would like to add unique touches to their homes. If you deviate too far from these standards, people may see you adversely,

particularly if you think of your house as a financial asset that must be appealing to potential buyers.

As for families, members often have different tastes and priorities, so they negotiate and compromise. For example, parents might allow children to have more personalized rooms while keeping shared spaces like the living room more neutral to meet social norms, appeal to visitors, and ensure that their home remains attractive to future buyers. This careful balance means that “Families encounter countless barriers to identity enactment. The marketplace both enables and constrains the type of identity construction practices available to families” (Epp & Price, 2008, p. 59).

People often pick styles, furniture, and décor that match what is considered tasteful and high-status in society. The home reflects a person’s social standing, and many feel pressure to decorate in ways that fit in with what their social group finds stylish or acceptable. Madigan and Munro (1996) discuss, “Questions of style, design, and tastefulness evidently cause anxiety, but they are largely subsumed by familial values [...] and also by the desire to maintain ‘respectability’ through maintaining high housekeeping standards” (p. 41).

Home as a Reflection of Identity

The home reflects identity because it showcases the personal tastes, values, and social status of the people who live there. The choice of colors, furniture, and décor allows individuals to express their unique style and creativity. Therefore, “‘Home’ is an important expression of identity, yet it is an identity which is only partially achieved through appearances (furnishing and decor) and overt consumption” (Madigan & Munro, 1996, p. 53). Beyond personal preferences, the home also signals cultural background and social class, with design elements reflecting heritage or social standing. In essence, Arsel and Bean (2012) show that the home is a key site where identity is both constructed and displayed, shaped by both individual preferences and external social influences.

What’s more, the way a home is arranged reveals the values and lifestyle of its occupants. A minimalist home might suggest a preference for simplicity, while eco-friendly features indicate environmental consciousness. Homes also act as social signals, giving visitors insight into the homeowner’s tastes and status. In this way, a home becomes a visible and personal expression of identity. In Casey (2017), as cited in Grant & Handelman (2022), “characterization of place as the ‘cardinal meridian of human experience’ where mind, body, and place align, draws our attention to the co-constitutive relationship between place and the human experience. Place shapes its inhabitants and its inhabitants shape place” (p. 884).

Reflecting your identity in a home is crucial because it fosters a deep emotional connection, turning the space into a personal sanctuary that promotes comfort and well-being. A home that mirrors your tastes and values allows for self-expression, providing a sense of fulfillment while also communicating who you are to others. This personalization can enhance functionality, as the space is tailored to meet your unique lifestyle needs. Beyond that, such a home can become a legacy for your family, imbued with personal or cultural significance, making it meaningful across generations.

Conclusion

These experts reached a consensus that consumption and identity are deeply intertwined in the context of home design, with choices about materials, furnishings, and aesthetics reflecting individual preferences, family values, and social norms. The home as both a personal and social space serves as a key site for expressing identity, shaped by the tension between personal taste and market-driven trends. Madigan and Munro (1996) articulate that "Home and family are powerful concepts which shape not only the way in which we *perceive* our physical surroundings, but also the way in which we *construct* our surroundings" (p. 55). Whether through family rituals, personal consumption, or social status, the home reflects a balance between the individual's desire for uniqueness and the societal expectations of style and status. Ultimately, how people design and interact with their living spaces reveals not only their identity but also their place in broader social and cultural systems.

Moreover, the market's influence on consumer choices plays a crucial role in shaping this balance between personal identity and social expectations. Media, tastemakers, and marketplace trends often drive individuals toward certain design norms, creating pressures to conform, particularly when homes are seen as financial assets. According to Grant and Handelman (2022), this dynamic can lead to a sense of "displacement," where the home feels more like a commodity than a personal refuge. However, individuals still navigate these external forces by integrating their unique preferences, values, and cultural identities into their homes. As such, the home becomes a complex reflection of personal expression, shaped by both individual agency and external market forces, revealing the ongoing negotiation between self-identity and societal norms in domestic spaces.

Findings

Consumers design their homes to reflect their identity as a form of personal expression and emotional connection. Through decor, they showcase their unique tastes, values, and cultural backgrounds, creating spaces that feel authentic and comfortable. Designing allows people to shape their environments, giving them control over their surroundings and fostering a sense of well-being. Consumers engage in emplacement rituals of

singularization to assist in establishing alignment between their place of home and their distinct individual and family identities, given that the house is a site of distinctive identity. In these singularization-related emplacement rituals, our informants set up their homes according to their identities by using the market (Grant & Handelman, 2022).

Additionally, home decor often represents important life experiences or aspirations. Whether it is displaying meaningful objects or selecting colors that evoke specific emotions, consumers create homes that not only reflect who they are but also tell their personal stories. Rituals refer to the habitual or symbolic practices that individuals perform regularly in their living spaces. These rituals are deeply connected to personal identity and values, often reflecting cultural traditions, personal routines, or lifestyle preferences. They help create a sense of comfort, stability, and meaning in the home environment. Epp and Price (2008) highlight how rituals play a significant role in shaping family identity through consumption. They contend that family rituals, whether connected to feasts, customs around the dinner table, or other regular activities, strengthen the family's sense of unity. Families can express common values, preserve relationships, and negotiate individual and communal identities with the use of these rituals.

In parallel, according to Grant and Handelman (2022), the term "market-reflected gaze" describes the outside pressure homeowners face to match the standards of the market rather than their tastes (p. 883). This look presents the house as an asset subject to market rules rather than the place of personal identity and singularization. Because they believe that their houses are assessed or appraised according to how well they fit these predetermined criteria, homeowners are discouraged from personalizing their environments and experience a sense of uncertainty. The evidence presented in Madigan and Munro (1996) study suggests that people feel like they are under increasing pressure to conform to a heightened consciousness of design and style in the home. The homeowner's distinctive choices are highlighted by the critical market-reflected gaze, which undermines the possibility of an inhabitant-place alignment. People's residences are always under scrutiny, which brings disgrace to the bad decisions made by the owners. Viewers are reminded by the judges' persistent judgment that they may be their neighbors, acquaintances, or even relatives. Specialists in the field, such as contractors, interior designers, and real estate brokers, support criticism (Grant & Handelman, 2022).

Conclusion

There is a complicated and important link between a consumer's individuality and how the market affects house design. Through investigating how lifestyle, cultural background, and personal style influence design decisions, we have observed how identity is entwined with the tools and resources at hand. Homeowners may have a confusing experience due to the conflict between their expression and external commercial norms, as demonstrated by the idea of a "market-reflected gaze" that questions individuality in house design (Grant & Handelman, 2022). To restate the main research issue, this study aimed to comprehend how customers strike a balance between their individuality and the limitations placed on them by external factors. Madigan and Munro (1996) say that "People can obviously be manipulated by advertising without realizing, or despite their best intentions" (p. 55). The results imply that although the market provides vital resources for interior design, it also brings pressures that may stifle genuine self-expression. This issue emphasizes how crucial it is to design environments that, despite cultural conventions and commercial standards, are faithful to the client's vision.

In practical terms, this study promotes a more individualized approach to house design by urging designers and homeowners to reject the temptation to adhere to strict market standards. Future studies should closely examine how certain demographic characteristics, including socioeconomic position or local culture, affect the relationship between design choices and identity as the market develops. Referring to the introduction, we reinforce the notion that dwellings, like our wardrobes, are potential symbols of who we are. In Besbris (2020), as cited in Grant & Handelman (2022), the home stands as unique in its status as a private place where rituals of emplacement serve to align the home with the unique identities of its dwellers. As time goes on, it is encouraged for both homeowners and designers to rise to the challenge of striking a balance between functionality and the ability to express one's individuality, resulting in houses that are authentic reflections of their personality. The house should continue to be a place of uniqueness and personal meaning despite outside influences.

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Enhancing Homes Through Sustainable Optimization

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When thinking about sustainability, people typically think about government policies and dominant international companies first, but it is better to start at a small scale. Instead, first look at homes and how large of an impact one neighborhood could make. There are many accomplished, cost-effective examples to be mirrored partially or completely. In essence, sustainable practices on personal property are practical and highly beneficial, especially when neighbors try to encourage the economy to support sustainable products.

To start, sustainability is strictly about humans prolonging resources among their land. Sustainability is not always about innovative progress or aesthetically pleasing looks. With homes, sustainability can be referred to as "green building," as Patricia Salkin explains: "The green building concept seeks to create structures which are environmentally responsible and resource efficient." Furthermore, subtopics under sustainability include "recycled building materials, energy efficiency, and reducing waste contributing to environmental degradation" (Salkin). A current issue within the population is people not being able to distinguish a problem, understand the whole concept of sustainability, and professional's vague assertions around sustainability. As an example, "In response to whether the society should spend more effort on preserving the environment 87% replied in favor of greater action and 89% of homeowners believed that environmentally sustainable materials should be used to build new homes" (Teal). In this example, people are in favor of a direct approach to sustainability with clear goals and means. Since people also see the "poorer" neighborhoods of their own community, "rundown" and "dilapidated" homes have unused potential and are simply wasting away. There is no doubt that neighbors believe efficient and sustainable action must be taken.

On a negative note, oftentimes the creation and renovation of homes consumes more resources that leads to an inflation of energy. Obviously, people are not making something that they do not intend to use. However, people do not realize how much harm will be reciprocated after a few years. Especially in condensed areas where, according to Madlener and Sunak, even though "cities account for only 2% of the earth's surface, they consume 75% of the world's resources" (Kong). Also, among cities "researchers consider urban areas as heat islands; dark surfaces in cities absorb the sun's heat during the day by 3 to 5 degrees Celsius more than the adjacent lands, and in this way contribute to 30% of air pollution" (HoushmandRad). Furthermore, according to Killip, Sherwin, UNEP.SBCI, and Wood "buildings consume more than 40%

of the world's energy, release one-third of CO₂ output, use 25% of harvested wood, release about 50% of fluorocarbon output, make up of 40% of landfill materials, use 45% of energy in operations, represent 40% of greenhouse gas emissions and use 15% of the world's usable water" (Olanrewaju). Looking more singularly at home construction, "The Australian residential construction industry makes up close to 7% of the Gross Domestic Product [GDP] and the construction sector causes approximately 23% of national carbon emissions" (Thomas). In general, homes as a part of cities and buildings are hyper zones of waste, consumption of materials, and loss of money.

As difficult as it is to separate buildings into commercial and residential buildings, the numbers correlate and reflect the same problems reported by homeowners, construction workers, and realtors. These groups, who have very different objectives, consensually agree that government initiatives need to better collaborate so that a greater push can be made. For example, "additional green building requirements, such as white/green roofs and water-efficient landscaping have been included as distinct requirements in some municipalities zoning and building codes" (Salkin). However, these codes are overlooked and not encouraged since the efforts are from individual entities. One example of a government initiative reinforced with the construction industry is the "green building techniques [which] have been standardized, to an extent, by the United States Green Building Council's Leadership in Energy and Environmental Design (LEED) rating system, and the Energy Star rating system" (Salkin). Although, one man who built an exemplary sustainable home noted a fault in LEED-informed system, as seen in Derrick Teal's quote: "Even with an experienced builder and architect, not everyone on the team was necessarily familiar with the intricacies of LEED." There is proof that LEED has gotten a foothold in the construction industry and people are aware of it. Also, LEED is not diminishing like other government ratings usually do, which is a sign of growth.

On a positive note, "Technology...has fostered greater public participation in the process [of creating sustainable solutions] and has enhanced our knowledge of geographic and environmental data to better inform decision making" (Salkin). As an example, Erinn Waldo shares how "...refrigerators have preserved food...[with]...harmful, carbon dioxide-emitting refrigerants...[but]...GE's system instead uses a water-based fluid rather than a chemical refrigerant and magnets instead of a compressor to cool the fridge..." creating a safer appliance for the home, residents, and outdoors (Waldo). Waldo also tells how "...LEDs may be more expensive than traditional light sources, but they last longer, saving money on energy and replacement costs in the long run." Specifically with LEDs, there has been an

influx of popularity, labeled as a "modern" solution. This has allowed manufacturers to invest in the production of LEDs and for people to save money by buying a cheaper product that is also considered an investment. Furthermore, the popularity of LEDs has created ways for technology to improve and exponentially decline the energy use of a home. This is how one element of a home, such as lighting, can make a significant difference in cost while maintaining a sustainable goal.

Continuing with technology, new innovations help homes regulate the indoor and outdoor space. One system, the Geographic Information Systems (GIS), has increased visualization of geography to identify thriving established uses of natural resources, land, and products (Salkin). GIS can be used to find critical information to place or input into sensors. This is seen in Waldo's information about large energy consumers like ventilation systems, which can be monitored with sensor technology so that use is minimal and creates less waste. Another example of this is by mapping wind directions and speeds with GIS by using a sensor that can be alerted to slow down the ventilation system. This can also help preserve large energy consumers.

Another aspect that homeowners can invest in is interior and exterior wood. In the past, wood has not proven its cost effectiveness, however "innovation in wood treatments, wood protection and insulation has provided solutions to these issues so that timber is now a viable option with added benefits such as environmental sustainability and erection speed" (Thomas). There is now a more accessible approach to using wood due to technology, such as the ability to reclaim wood and use recycled material with less waste (Waldo).

Focusing on exterior concerns, large yard plants like trees are the best option to protect personal property. "Trees absorb 9% of solar energy in summer and can also reduce the internal heat of buildings. In residential areas that are in windy areas, planting trees as windbreaks can reduce the cost of heating buildings by 4 to 22% depending on the degree of windiness and density of the windbreak" (HoushmandRad). Trees significantly neutralize weather, especially since "14 of the hottest years have been in the last 20" (Smith). One aspect often not thought about is "the temperature difference between day and night... [which can be reduced by the trees] ...absorption of solar radiation [long waves] ..." (HoushmandRad). The reason collections of larger plants are preferred is "Due to the expansion of its leaf surface compared to other forms of green space, gardens [with trees and bushes] can increase the relative humidity and softness of the air through transpiration...[so]...a strip of 50 to 100 meters wide reduces the heat by 3 to 4 degrees...[and]...adds 50% to air humidity..." (HoushmandRad). Where a few degrees may not seem like a lot and the length of the gardens too much,

remember that neighbors can come together for a joint operation and split the maintenance. In many cases of sustainability, a slight difference is a big win towards improvement. Usually there is a snowball effect rather than an immediate explosion, which is key to sustaining actions. As an example, "Conifer trees up to 40% and broadleaf trees up to 20% have the ability to capture rainwater and return it to the atmosphere through evaporation," which will amount to more as the tree grows (HoushmandRad). Additionally, the property will have less water drainage over time. Lastly, it is important to know as a property owner that "It's not the gradually increasing temperatures that kill plants [and damage property], it's the increase in extreme events: big storms, big winds, very heavy rain, hail, droughts..." ("A Forest Garden").

Building on the benefits of outdoor plants, it must be addressed on how to make such a biome. One example is "Martin Crawford, an unconventional gardener who grows 500 edible plants with just a few hours of maintenance per month" ("A Forest Garden"). The basic concept of this easy-going method is "...plants of indirect use, system plants to help the system function better and that includes nitrogen fixing plants, mineral accumulators, [and] plants to attract beneficial insects to eat all your pests" ("A Forest Garden"). Why do work when there are plants eager to do it themselves? While the garden may take up more space, logically it is not a problem since it will support more than one household. Also, it is a recreational area where one can take walks, picnics, and generally enjoy nature. Especially in cities, gardens provide benefits like "...produce oxygen, reduce pollution caused by industrial fine dust in the atmosphere, regulate temperature, stabilize soil, beautify the environment, control pollution, and create artificial air arteries and generate wind in cities" (HoushmandRad). Overall, having a small community green area like a neighborhood garden is doable, efficient, and wholly beneficial.

As with any project, having a planned approach to home improvement is critical. Also, it must be recognized that perfection is not the goal, but instead the long-term stability within limits such as cost and space. Ultimately, "Trade-offs are inevitable, so navigating and prioritizing activities can result in positive, less environmentally damaging results" (Smith). Humans cannot be prohibited from acting and developing, so mitigation has a larger effect. Sustainability mostly meshes with human activity and natural activity. Therefore, people should not be concerned about absolute withdrawal from normal activities. For example, solutions like "If you're cold, put on a coat...Don't buy stuff that you don't need...[and]...plant trees..." may seem nice but are not realistic (Smith). Thankfully, there are practical actions such as using heating systems less, buying less one-use items, and planting

trees systematically. Many of these examples have solutions in the making such as the sensor technology mentioned above, LED lighting which has a longer life, and neighborhood green areas that are growing trees. Derrick Teal described his experiences, stating that the largest trade-off in luxury can be offset with interior items as more money is going towards the quality of items. All one needs to do is sit down and do some online shopping to find a good deal and a LEED certified appliance all at once. Mentioning the Australian house project about timber again, "The majority are convinced that timber is the most sustainable material however they have indicated that they would choose a new home built of concrete structural floor and brick veneer," since they believe that new brick homes are more "low maintenance" (Thomas). However, research suggests that wood is not low maintenance, yet people still pay more for lesser products.

It must be addressed that there are "natural limits... [in] regard ...[to] ...economic growth," and so eventually the environmental issue will become greater than the monetary issue (Ims). However, the goal is not to wait for that day. Another issue is socioeconomics inadvertently suppressing sustainability. According to Assadourian: "There will always be a reference group to challenge the individual consumer to obtain a higher standard of living" (Ims). Instead of becoming a selfish society, citizens should look work to help their community by encouraging competitive markets, Earth-protecting practices, and community like "...the royal Thai Sufficiency Economy Model... [which]... involves concerns for employees, the environment, and genuine care for all externalities and for the long-term health of the business" (Ims). In all, the stability of a community's economics and self-identity impacts how sustainable movements can be.

When looking at costs, do not be single-minded since our habits create trends which sway business innovations, concentrations, and economics (Smith). Interestingly, "Companies that are known for environmentally responsible prices are steadily becoming more appealing to consumers," which shows the promise of a sustainable initiative within home products (Waldo). There are discouragements such as the following information from IMRE:

The primary reason architects and interior designers use sustainable products is because they want to, not because they need to...[,] Nearly 60 percent of architects and 56 percent of interior designers identified their own sense of environmental responsibility as the key driver for specifying sustainable products...[,] More than half of the professionals from both industries surveyed agreed that sustainable products are more expensive...[,] 40 percent of architects and 34 percent of interior designers are 'uncertain' if products claiming to be sustainable are actually sustainable...[and] Government and industry incentives are the key driver for only 0.5 percent of architects and 1 percent of interior designers. ("IMRE")

However, many of these percentages have increased as sustainable product ratings have become known. Technology has evolved public perceptions, and there are more products available like wood treatments. Additionally, "The majority of homeowners also indicated that government subsidies would increase the chance of their selection of sustainable building material" (Thomas). Olanrewaju sums it well by saying "Affordable housing has great potential for sustainability, despite the fact that existing affordable housing stock does not comply with sustainability requirements." However, it is important to not cage the idea of wholly sustainable products, allowing potential for products to develop.

In contrast to negative outlooks, here are several modern examples of working solutions. To begin with, Waldo mentions "Nearly every element, from tile to the oven, is now offered in styles that reduce cost to the environment." This is mitigation at its finest. Also, Olanrewaju mentions that the "research found that all the [sustainable] benefits were obtainable without compromise," which includes affordable housing, and "defined as those for people falling in a medium income range and below...[accounting] for more than 70% of buildings in most countries" (Olanrewaju). To review Derrick Teal's home, the cost was \$142 per ft² after the renovation of the 1988 ft² home, which in the USA is considered an "affordable house." In all these cases, the "aspects of the quality of life...often [shows] 'less is more' and 'more is less'" (Ims). Additionally, now the public must "incentivize ambition and celebrate achievements... [and] ...need to measure and communicate the social ethical and environmental impact...," so these sustainable practices can create a snowball effect (Smith).

To end, sustainable homes are real and provide relevant benefits to citizens. Derrick Teal explains that his home "has already come within a shade of net zero [energy use], and he hopes to officially get it to net zero by adding additional solar wattage [with solar panels]." To further support such endeavors, contractors and home industry workers are becoming familiar everyday with sustainable rates shown by Olanrewaju's work, as "82% of the housing professional respondents [121] believed that sustainable affordable housing offered all 23 benefits [from]...5 components: environmental, energy, social, cost and status" (Olanrewaju). This includes anything from nurturing a safer neighborhood to lowering CO₂ emissions. As Knut would say, these benefits are a "development," stating that "While growth is connected to increases in material resources, development is connected to inner peace, imagination, and enjoyment of life in a wide sense." In conclusion, sustainable developed properties are a present solution for happier and healthier neighbors and nature.

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Merrill Lynch & Co., Inc.: Ethical and Legal Implosions Pre - 2009 Bank of America Merger

Cheri Regis

Abstract

Prior to being acquired by Bank of America Corporation in 2008 during the 2007-2009 global financial crisis, Merrill Lynch & Company, Incorporated (now called Merrill under Bank of America's investment and wealth management division) was the epitome of sound, legal and ethical business principles and practices. What made this brokerage firm distinct from its competitors was its widely renowned "Mother Merrill" culture, which consisted of collaborative teamwork, mentorship, client service and ethical communication. From the beginning of the early 2000's leading up to early 2007, deceptive business practices, risky mortgage assets, and dealings fueled by self-interest and advancement pervaded this time-honored, storied enterprise. What was once an independent, iconic franchise that originally was designed to bring "Wall Street to Main Street" to the average investor, is now a tragic tale of self-inflicted greed, excess, corporate ignorance, and internal erosion of business ethics. These factors have only served to accelerate and exacerbate the firm's financial and legal woes. This paper examines and analyzes the ethical ramifications concerning corporate leadership at Merrill Lynch, the role subprime mortgage originators play in the firm's venture into the non-prime asset market, and whether or not the firm was complicit in insider trading before the 2008 Bank of America merger.

Keywords

Corporate Social Responsibility, Business Ethics, Merrill Lynch, Risk Management, Insider Trading, Investment Banking, Securities Law, Subprime Lending

E. Stanley O'Neal's Necessary Evils: An Introduction

The decline and eradication of Merrill Lynch's moral compass along with its Mother Merrill ethos began in early 2002. At the time, E. Stanley O'Neal, the president of later chairman and chief executive officer (CEO), took the initiative of ruthlessly firing experienced executives in key senior positions. He replaced them with individuals who had little to no experience in risk management or investment banking. O'Neal also worked aggressively to cut down Merrill Lynch's bloated cost structure and dismissed a total of 24,000 employees and 19 executives. According to Eric Weiner of National Public

Radio, this was a third of Merrill's workforce. He also writes that this level of cost-cutting was unpopular among employees (Weiner, 2007). This decision, according to O'Neal, was a necessary evil. At the time of his appointment, the firm was spending excessively and had thin profit margins (Thornton, 2001). This established an environment and climate of poor accountability and lack of oversight, which allowed for unethical business decisions and practices among top Merrill management. As authors note in the *International Research Journal of Marketing and Economics*, business leaders, especially CEOs, have greater power and therefore have a greater chance of making unethical decisions to produce group goals (Hardy et al, 2016). They also state that CEOs hold a disproportionate amount of responsibility in both setting goals and inspiring collective action to attain organizational goals (Hardy et al, 2016). Ultimately, CEOs are perceived to be accountable for business mishaps as well as successes. This assessment is accurate and can be seen in O'Neal's decision-making process and actions. Merrill's board of directors charged O'Neal solely to make Merrill Lynch profitable and modernize the firm's operations. O'Neal did indeed meet his goal of maximizing profits, but only out of antagonism, favoritism, short-sightedness, and deception.

Merrill Lynch wasn't the only investment bank on Wall Street to nurture this hyper-competitive climate of bringing in "easy money" under questionable pretenses. Household names on Wall Street such as JPMorgan Chase, Citigroup, Bear Stearns, Lehman Brothers, Morgan Stanley and Goldman Sachs also perpetuated this "winner take all" mentality. This was all done at the expense of seasoned risk professionals and frontline employees. Another necessary evil O'Neal had undertaken was eliminating the Mother Merrill culture without establishing a new one to improve employee morale, encourage accountability, boost profitability, and enhance the firm's branding, image, and credibility in the financial marketplace. Before the O'Neal regime, Merrill Lynch's Mother Merrill culture, largely one of paternalism, clubbiness, and community, embodied certain aspects of corporate social responsibility (CSR), which the website Investopedia defines as a "self-regulating business model that helps a company be socially accountable to itself, its stakeholders, and the public." Companies who engage in CSR have an awareness of how their business impacts swaths of society, especially the social and economic aspects.

Merrill Lynch, founded by visionary businessman Charles E. Merrill in January 1914, integrated and practiced CSR by "bringing Wall Street to Main Street," a credo by which Merrill democratized the stock market. This was done by including the average investor with a small account on Main Street as both clients in his enterprise and in the stock market, which traditionally caters to wealthy Wall Street clients and professionals alike. In his journal entry for the *Journal of the North American Management Society*, John

D. Farlin, Ph.D., notes that in 1911 Merrill wrote an article for Leslie's Illustrated Weekly under his trademark theme "Mr. Average Investor" before launching his brokerage firm. This average investor wrote on to teach readers how to consider the customer's goals and risk tolerance. Merrill used advertising in all of its forms to amplify his vision and mission of transforming the average citizen into a participating investor in the stock market (Farlin, 2008). This is a model example of CSR. Even before the term entered into the mainstream business vocabulary, and long after Merrill's day and age, he considered the social and economic impact he and his eponymous firm would have not only on his future clients, but also on his future employees, business partners, and the public at large. Fast forward to the 2000s, there is little to no indication of CSR in the O'Neal regime. The embattled former chairman and CEO of Merrill Lynch focused only on the economic impact and outcome of the firm, its clients, its shareholders, and the financial markets, all at the expense of his longtime senior management team and society at large.

Merrill Lynch's Costly Venture into Subprime Mortgage Securitization and CDO Creation

From 2003 to mid-2006 the U.S. economy enjoyed a boom fueled by the real estate market as broker-dealers, insurers, and subprime mortgage lenders capitalized on the market by investing in residential properties, mortgage-backed securities, and issuing mortgages through subsidiaries to homebuyers below the credit score spectrum. At this time, the investment banking industry was no longer confined by the dictates of the Glass-Steagall Act of 1933, which had separated commercial banking activity from investment banking activity. This law was later repealed by Congress in 1999, opening the door for the investment banking industry to delve into financial activities, such as investing in hedge funds and advising clients and retail investors simultaneously. While Merrill Lynch was late to the party in the subprime mortgage market in 2000, by 2006 it had become the largest manufacturer and seller of mortgage-backed securities (MBS) and collateralized debt obligations (CDOs). These are complex financial vehicles that, as Roger Yu defines in an article for USA Today, "are put together with underlying debts, such as mortgages, and pay investors based on the cash flow brought in by the assets."

In 2006 Merrill Lynch acquired First Franklin Financial Corporation and its affiliated lending units for \$1.3 billion as a source of its mortgage originating and securitizing operations for its CDO and MBS businesses. First Franklin Financial, founded in 1981 in San Jose, California, specialized in servicing and lending subprime mortgages. This subprime wholesaler was

previously owned by National City Corporation, a Cleveland-based bank that was heavily involved in the subprime mortgage business starting in the late 1990's, with \$10 billion in toxic assets in its balance sheet. The bank would later be entangled in financial trouble. According to author Randy Roguski, there were ten actions that executives at National City didn't think through enough. One was focusing solely on mortgage lending through third-party brokers, as well as the 1999 acquisition of First Franklin Financial from a Bank of America subsidiary for \$266 million. Another action would be not selling its subprime subsidiary sooner to Merrill Lynch for \$1.3 billion. In addition to this, Merrill Lynch bought First Franklin because the subprime lender had become worthless in the eyes of National City, which suggests that the Cleveland-based bank hastily sold its asset in a fire sale. This would be a harbinger of what was to become of Merrill Lynch as an independent entity.

From a researcher's perspective, it should be noted that during the dealmaking and acquisition process between the Bank of America subsidiary, National City, and Merrill Lynch, that there was little to no pushback or intervention from federal or state regulators. Specifically, agencies such as the Federal Reserve system, the U.S. Federal Trade Commission (FTC) or the U.S. Securities and Exchange Commission (SEC) were notably passive. Furthermore, there was never any indication that both parties did their due diligence or bother to look at the history, past performance, and track record of the subsidiaries and their parent company whose performances had fluctuated with the real estate market bubble. They also did not consult with their corporate constituencies or legal counsel about the deal being made between the two firms prior to the sale. In short, the acquisition of First Franklin Financial from the Bank of America subsidiary to National City to Merrill Lynch demonstrated how quick, effortless, and unregulated the investment banking and subprime lending industries were at the time. In terms of new mergers and acquisition, this is significant when compared to the traditional lending industry, which must seek prior written approval from the U.S. Housing and Urban Development (HUD) before pursuing a merger or acquisition.

As multiple media reports suggest, lack of oversight and review from federal and state agencies along with lowered mortgage underwriting standards and contributed to the unethical processes of the subprime lending industry. Unsurprisingly, as authors examined in their legal assessment of the subprime lending crisis in *Risk Management* magazine, subprime lenders with lax or inappropriate sales policies such as First Franklin Financial "faced a wave of individual predatory lending claims" (Houlihan & Smith, 2007). They continue to note that these lenders and their individual board members have also faced a growing number of security class action suits from stockholders alleging that false and misleading public filings affected their investment

decisions and incurred economic loss when the lender's stock value dropped (Houlihan & Smith, 2007). Nevertheless, financial, legal and ethical consequences caught up with these predatory lenders during and after they went out of business. As Fordham University School of Law professor David Schmudde writes in his article for the Fordham Journal of Corporate and Financial Law, the city of Cleveland, where National City is headquartered, has sued banks and financial institutions under the state public nuisance law. This law asserts that the financial institutions created a public nuisance in areas of Cleveland because their loans led to widespread abandonment of homes (Schmudde, 2009).

Although there is no evidence that National City, First Franklin Financial, or Merrill Lynch have been sued for predatory lending, the financial and legal climate these firms were operating in suggests that local government, consumers, and investors are now wise to the illusory ruse of the subprime lending and investment banking industries. There is an understanding that it is an open season for any market participant that played a notable role in the crisis. Ultimately, as it has been widely reported by multiple media outlets covering the mortgage industry, Merrill Lynch as a parent company has shut down First Franklin Financials subprime lending operations and two of its subsidiary units in 2008, and as a combined entity with Bank of America reached a settlement agreement with numerous state and federal officials, unwinding ill-gotten gains from their subprime enterprises in 2014, as company documents show. As for National City, the former parent company of First Franklin Financial, it was brought down to its knees as the real estate bubble burst in 2007 and were acquired by PNC Financial in 2010 with assistance from the federal government.

Insider Trading: Shapiro v. Merrill Lynch, Pierce, Fenner and Smith, Inc.

Throughout its century-old history as a Wall Street mainstay, Merrill Lynch and its founding workforce had a reputable standing as prudent, forward-thinking, financial statesmen. As stated previously, the brokerage's Mother Merrill culture was one of collaborative teamwork, mentorship, and client service. However, starting from the late 1960s to as recently as 2011, several of Merrill Lynch's employees mostly from the firm's trading desk and senior management team had been accused of a variety of egregious white-collar crimes and deceptive business practices such as insider trading. According to the U.S. Securities and

Exchange Commission's (SEC) website, under the Securities Exchange Act of 1934, insider trading is illegal "when a person trades a security while in possession of material nonpublic information in violation of a duty to withhold the information or refrain from trading." On the other hand,

Investopedia explains insider trading is legal “if the insider makes a trade and reports it to the SEC, but insider trading is illegal when the material information is still nonpublic.” In other words, acting on a trade armed with the advanced knowledge of the activity or outcome of security can be seen as an unfair advantage and leverage to the trader (the insider). The trader’s actions, no matter how large or small, can have unintended negative effects not only on the company issuing the targeted security and its share price, but also in the capital markets at large.

According to Christopher M. McCarthy of the *St. John’s Law Review*, one of the most notable insider trading cases is *Shapiro v. Merrill Lynch, Pierce, Fenner and Smith, Inc.*, 495 F.2d 228 (2d Cir. 1974), in which the court held that “the recipients of inside information (also known as “tippees”) who buy or sell securities without disclosure of the information can be held liable under Rule 10b-5, 17 C.F.R., § 240.10b-5 (1974) in a private action for damages brought by persons trading in the stock over a national securities exchange.” The presiding judge of the case also ruled that the tippees of nonpublic information can be held accountable even though the tippers themselves did not trade in the security (McCarthy, 1975). Because Merrill Lynch positioned itself as a prospective managing underwriter of the aircraft company Douglas in 1966, as McCarthy noted, the firm became privy to material inside information concerning Douglas’ projected earnings which trended downward. As a result, both the firm and its clients profited from this inside tip, while investors without this information suffered great losses from Douglas’ stock. To summarize, an underwriter is liable to private investors with whom the firm had no direct dealings. This will not be the only insider trading case that Merrill Lynch will have to contend. The firm will have dealt with another major insider trading case concerning its prominent technology sector analyst which will prove to be massively scandalous considering the dotcom boom and bust of the 1990s and early 2000s.

Summary and Conclusions

After accounting for its fluctuating ethical and legal history and its responses to challenges varying widely in severity and scope, Merrill Lynch was a firm that from its founding in 1914 all the way up until 2008 championed sensible business ethics and practices that stood the test of time. Specifically, it took pride in its workforce and network of financial advisors widely known at the time as “the thundering herd”. The same can be said for Charles E. Merrill, whose goal was to bring Wall Street to Main Street and democratize the stock market for the good of all members of society. Of course, this storied brokerage house had endured trials and tribulations both large and small, from internal unscrupulous processes to shake-ups in leadership and management. However, up until its downfall and absorption into Bank of America in 2008 during the Great Recession, the vast majority of

Merrill Lynch dealings complied with the rule of law and conducted in a manner that was compliant with local, state and federal regulators. From admitting misrepresentations in its financial statements to its shareholders to consenting to new rules and regulations by policymakers and authorities, this century-old financial institution has been proven itself repeatedly, showing that it is ultimately an institution bullish on business law and ethics. It is deeply unfortunate that lack of institutional oversight and accountability, mismanagement of company resources, a Machiavellian leadership regime, misconduct among employees, and bad bets and investments all contributed to the demise of a Wall Street titan. However, it is consolable to know that what remains of Merrill Lynch is now reincarnated into what is an investment division of one of America's largest financial corporations in the world.

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Implementing a New Identity Governance and Administration System

Daniel J. Snapp

Abstract

This report presents a comprehensive system proposal for an Identity Governance and Administration (IGA) framework designed for NeuroComputing Corp. (NCC). It outlines the strategic alignment of the system with corporate objectives, including emphasizing enhanced security, operational efficiency, and cost-effectiveness. The document elaborates on the system's feasibility by detailing technical, economic, and operational viability, alongside a thorough analysis of system requirements and data models. This proposal serves as a pivotal blueprint for advancing the company's identity management capabilities, ensuring robust security, and fostering a streamlined operational environment.

Keywords: Identity Governance and Administration (IGA), system design, system requirements, data modeling, feasibility analysis

NeuroComputing Corp. (NCC), a fictional national consumer electronics corporation, is developing a new Identity Governance and Administration (IGA) system. The demand for this system is necessitated by the limitations of the existing architecture, especially as NCC gears up for global expansion. Current operational inefficiencies, instabilities in the system, and the increasing complexities of safeguarding sensitive data have become paramount concerns. These issues not only pose immediate operational hurdles but also hinder the system's capacity to meet the corporation's evolving business requirements. This project is on a moderately short timeline and has high visibility throughout the organization. A comprehensive and well-structured planning effort is essential to ensure the successful implementation of the new system.

Project Initiation

NCC is embarking on a strategic endeavor to develop a new IGA system, under the guidance of the Chief Technology Officer, Jordan Lee. The dedicated Project Manager (PM) has been tasked with spearheading this initiative. The PM's immediate responsibilities include generating a comprehensive system request, developing an in-depth project plan, and conducting a thorough feasibility study.

System Request

The journey to the new IGA starts with a system request. This document describes the business reasons for building a system and the value that the system is expected to provide. The system request is displayed in Table 1 and contains information regarding the project sponsor, business need, business requirements, business value, and special issues or constraints.

System Request – IGA Enhancement Project
Project sponsor: Jordan Lee, Chief Technology Officer, NeuroComputing
Business Need: This project is initiated to create a new IGA for NCC. As the corporation expands globally, there is an urgent need to develop a more robust, efficient, and scalable IGA solution to effectively manage employee access and safeguard sensitive data. This project is critical in transitioning to a system that can support international operations and evolving cybersecurity challenges.
Business Requirements: <ul style="list-style-type: none">• The new IGA system will be cloud-compatible, enabling global accessibility and scalability.• It should integrate seamlessly with existing systems like Active Directory, Azure, and AWS, and incorporate advanced security protocols including Zero Trust architecture.• The system will also feature automated processes for user access management and real-time monitoring capabilities.
Business Value: The new IGA system is anticipated to significantly improve operational efficiency and data security across the organization. Expected tangible and intangible benefits include: <ul style="list-style-type: none">• A reduction in system-related inefficiencies by 30%, translating to increased productivity.• Enhanced data security measures, aiming to reduce the chance of security breaches.• Cost savings of approximately \$160,000 annually in IT maintenance and infrastructure support.• Return on Investment (ROI): 100% (~\$500,000)• Net Present Value (NPV): ~ \$292,353
Special Issues or Constraints: The implementation of the new IGA system is essential for NCC's strategic plan for global expansion and digital transformation. The project is time-sensitive, aligning with the company's roadmap for entering new international markets. As a result, progress on this project is highly visible.

Table 1: System Request – IGA Enhancement Project

(Balaouras, n.d.), (Dennis et al., 2021), (del Sol & Ghemawat, 1999), & (Stobierski, 2020).

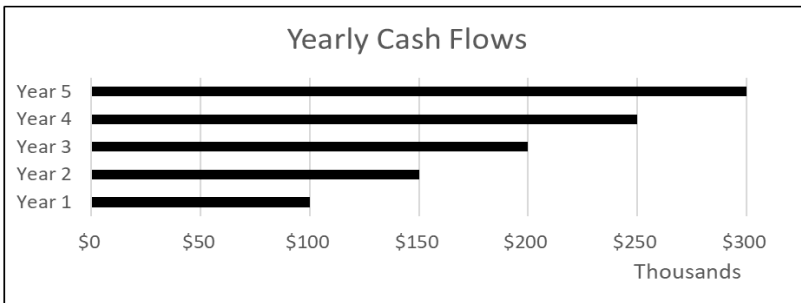
Business Value Explained

The five statements in the business value section of the system request in Table 1 fall into the following categories: productivity, data security, cost savings, and revenue.

- **Productivity** – The 30% productivity gain was calculated from the delta of the current team’s velocity during a sprint versus the proposed system’s proof of concept.
- **Data Security** – Understanding the current authentication and authorization tooling, implementing Zero Trust (ZT) can enhance a firm’s security posture while enabling them to accelerate deliveries (Balaouras, n.d.).
- **Cost Savings** – The projection of \$160,000 is based on NCC’s current infrastructure costs as compared to that of the Platform-as-a-Service (PaaS) provider’s fees.
- **Revenue** – Return on Investment (ROI) and Net Present Value (NPV) forecasts are based on the calculations in Figure 1. Considering the given assumptions, the NPV of the IGA system project is approximately \$292,353, and the ROI is 100% (del Sol & Ghemawat, 1999). These financial metrics suggest that the project is a profitable investment for NCC, with the NPV indicating a positive return above the cost of capital and the ROI showing that the benefits are twice the costs over the project’s duration (Stobierski, 2020).

ROI & NPV Calculation & Assumptions

- Initial Investment: \$500,000
- Discount Rate: 7% or 0.07



$$\text{ROI} = (\text{Total Benefits} - \text{Total Costs}) / \text{Total Costs} * 100\%$$

$$\text{ROI} = ((\$100\text{k} + \$150\text{k} \dots + \$300\text{k}) - \$500\text{k}) / \$500\text{k} * 100\%$$

$$\text{ROI} = 100\%$$

$$\text{NPV} = \sum ((\text{Cash Flow at Year}(n) / (1 + \text{Discount Rate})^n) - \text{Initial Investment})$$

$$\text{NPV} = (\$100\text{k} / (1 + 0.07)^1) + (\$150\text{k} / (1 + 0.07)^2) + \dots + (\$300\text{k} / (1 + 0.07)^5) - \$500\text{k}$$

$$\text{NPV} = \sim \$292,353$$

Figure 1: ROI & NPV Calculation & Assumptions

(del Sol & Ghemawat, 1999) & (Stobierski, 2020).

Project Planning

NCC's project selection steering committee has given its full support to initiate this project. The PM must now begin the planning process, which involves several critical considerations. Several key variables need to be defined to inform subsequent planning efforts. These include the clarity of user requirements, familiarity with technology, system complexity, system reliability, project timeline, and schedule visibility. Once these factors are thoroughly understood, the PM can make informed decisions about the most effective project methodology. Finally, the PM will need to develop a staffing plan to estimate the required resources and define their hierarchical alignment within the project structure.

Project Plan Variables

Table 2 displays the components, assumed results, and an anecdotal rating that the PM will use in determining the project plan.

Component	Assumed Results	Rating
<i>Clarity of User Requirements</i>	The project has identified a Minimal Viable Product (MVP) that will need to be deployed incrementally and with possible changes in requirements as the system matures.	Indeterminate
<i>Familiarity with Technology</i>	System architects have had sufficient time to familiarize and upskill the development team on the new tooling and development methods.	Familiar
<i>System Complexity</i>	Much of the complexity of the system is in the standardization of the input data and not the system itself.	Low
<i>System Reliability</i>	This system will need to be available during retail business hours. This puts some additional focus on redundancy and the ability of the application to recover from unexpected outages.	High Availability
<i>Project Timeline</i>	The project timeline is relatively short. The team will have 12 months to deliver the MVP and delays to the implementation will have fiscal impacts.	Expedited
<i>Schedule Visibility</i>	The project's milestones will be highly visible to both the senior management and customer cohorts. Completing work on time will be a marker of success.	Highly Visible

Table 2: Project Plan Variables (Dennis et al., 2021) & (Watson, 2007).

In summary, with the project variables defined, the following comprehensive assessment can be formulated: The new IGA system's full requirements are yet to be fully determined; the project team has familiarity with the technology; the system design will aim for low complexity; it must ensure high availability, particularly during business hours; the timeline is expedited; and the schedule will be highly visible to stakeholders and customer groups.

Methodology Selection

NCC has been utilizing Agile project delivery for many years, making it a standard practice. Agile emerged from a crisis in the 1990s, marked by a significant lag between business needs and product development (McQuade et al., 2019). Like many modern companies, NCC has embraced the benefits of Agile, investing substantially in upskilling its workforce to understand its nuances and implementation techniques. Within the Agile framework, NCC is familiar with three popular methodologies: Scrum, Extreme Programming (XP), and Kanban. The pros and cons of these frameworks are examined in Table 3.

Framework	Pros	Cons
Scrum	Promotes organized development with regular sprints and clear roles.	Can be rigid due to its structured sprints and roles, limiting flexibility.
Extreme Programming (XP)	Highly emphasizes customer satisfaction and adapts well to changing requirements.	Requires frequent meetings and close collaboration, which can be challenging for distributed teams.
Kanban	Offers flexibility with continuous delivery and no prescribed roles.	Can lead to overburdening team members without the strict timeboxes found in other frameworks.

Table 3: Agile Framework Examination

(Dennis et al., 2021).

The team supporting the existing IGA operates as a Scrum team. The PM has concluded that this approach is suitable for this project, given the indeterminate requirements and the need for a short, yet visible, delivery schedule. To enhance development quality, the developers will employ techniques from XP, such as pair programming, to help minimize errors (Balijepally et al., 2009). Additionally, the team's Agile tooling software includes a Kanban board feature, which will be utilized to visualize workflow

and manage work-in-progress limits (Dennis et al., 2021). This integration of Kanban principles will complement the Scrum framework by encouraging the team to focus on completing existing tasks before undertaking new features, ensuring a balanced and efficient workflow.

Risk Analysis

All projects come with inherent risks, and NCC’s project to build a new IGA system is no exception. Based on a thorough analysis at this stage of the project plan, the PM has identified three primary risks: scope creep, resource management, and technological compatibility. These risks, critical to the project's success, have been further evaluated and detailed in Table 4.

<i>Risk Factor</i>	<i>Description</i>	<i>Risk Rating</i>	<i>Mitigation Strategy</i>
<i>Scope Creep</i>	Risk of expanding beyond the original scope due to MVP delivery.	Medium	Implement strict change control, define MVP clearly, and regularly review project scope.
<i>Resource Management</i>	Challenges in resource distribution due to the short timeline, affecting deliverables.	High	Develop a detailed project plan with realistic timelines, prioritize tasks, and maintain flexible resource management.
<i>Technological Compatibility</i>	Compatibility issues when integrating the Proof of Concept (POC) with production systems and standardizing existing data.	High	Conduct compatibility testing in a simulated environment, engage with vendors, and plan for contingencies.

Table 4: Risk Analysis & Mitigation Strategies
(Dennis et al., 2021).

Acknowledging the full spectrum of risks, including lower severity and external risks such as staff training, vendor stability, and technical defects, is crucial for comprehensive project planning. The insights gained from these risk assessments are instrumental in guiding the PM and ensuring that all potential challenges are adequately addressed.

Staffing Plan

In the development of a comprehensive staffing plan for the IGA system project, optimal allocation of human resources will be a key focus. With the project demanding 100 person-months of effort over a 12-month timeline, an average of 8 full-time staff members is required (Dennis et al.,

2021). This allocation is planned to be dynamically adjusted across different project phases, catering to varying requirements from analysis and development to quality assurance and documentation. As depicted in Figure 2, the staffing plan details the specific distribution and roles of team members, ensuring the project's objectives are met efficiently and effectively.

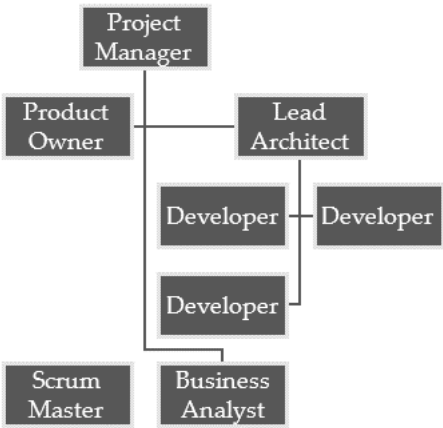


Figure 2: IGA Project Team Hierarchy
(Scaled Agile Framework, n.d.).

The development of the staffing plan was significantly aided by the availability of historical velocity data from the team. The PM will communicate the project vision, collaborating with the Product Owner (PO) and Lead Architect to prioritize work. The Scrum Master will facilitate Scrum ceremonies (including a team charter), ensuring smooth progress and establishing team norms. Meanwhile, developers and business analysts will collaborate to deliver features, steering the new IGA system through its critical milestones (Scaled Agile Framework, n.d.).

Standards & Documentation

The PM has tasked the PO and Lead Architect with collaborating with the team to agree upon standardized procedures. These procedures encompass key artifacts generated throughout the project, including required test cases, communication templates, coding standards, system architecture blueprints, and Agile process guidelines (Dennis et al., 2021). These standards and documentation guidelines have been published in Table 5.

Standard	Description	Recommended Standard
<i>Required Test Cases</i>	Document outlining the specific scenarios and conditions under which the IGA system must be tested.	Use industry-standard testing frameworks like International Software Testing Qualifications Board (ISTQB) ¹ guidelines, focusing on security and functional testing.
<i>Communication Templates</i>	Predefine formats for project communication to ensure consistency.	Adopt templates from the Project Management Institute (PMI) ² standards, customized for Agile environments. Include formats for status updates, meeting agendas, and reports.
<i>Coding Standards</i>	Guidelines for writing code to ensure readability, maintainability, and security.	Follow industry best practices such as Open Web Application Security Project (OWASP) ³ for secure coding and GitHub's coding guidelines for style and structure ⁴ .
<i>System Architecture Blueprints</i>	Detailed diagrams showing the IGA system's architectural design, including integrations and data flows.	Utilize Unified Modeling Language (UML) ⁵ for comprehensive and standardized architectural visualization.
<i>Agile Process Guidelines</i>	A set of procedures for implementing Agile methodologies in the project.	Reference the Scrum Guide for Scrum practices ⁶ and supplement with XP ⁷ practices for development work.

Table 5: Standards and Documentation for IGA System Project

These standards are robust and represent thoroughly practiced strategies, enabling the IGA team to spend more time focusing on delivering value to the stakeholders. For additional details on the standards listed, refer to Footnotes 1 through 7.

Feasibility Study Results

Several aspects of the project's feasibility have already been evaluated. As Dennis et al. (2021) explain, “feasibility analysis guides the organization in determining whether to proceed with the project.” These authors further categorize this analysis into three main areas: technical, economic, and organizational feasibilities. Using methods described in chapter 1 of “System Analysis and Design,” the assessment of these factors can be extrapolated based on previous explorations in this report.

Technical Feasibility: “Can We Build It?”

Given the analyses conducted, the technical feasibility of the new IGA system is affirmative. The team has assessed the system's technical requirements and confirmed compatibility with existing technologies at NCC. The project leverages the team's familiarity with Agile frameworks (Scaled Agile Framework, n.d.) and integrates with current systems, ensuring that the technical aspects of the new IGA system are well within the capabilities of the organization.

Economic Feasibility: “Should We Build It?”

The economic feasibility of the IGA system is supported by a comprehensive cost-benefit analysis. The projected ROI of 100% and the positive NPV of approximately \$292,353 indicate favorable long-term financial implications (Stobierski, 2020) & (del Sol & Ghemawat, 1999). Details of this analysis can be explored in Table 6, which includes development costs, annual operating costs, and annual benefits.

Category	Description	Estimated Cost	Basis of Calculation	Source
Development Costs				
Personnel	Project team and staff	~\$300,000	100 person-months over a 12-month timeline for ~8 staff members	U.S. General Services Administration (2024)
Technology	Software and hardware costs	~\$100,000	Amazon Web Services pricing guide	Amazon Web Services (2024)
Materials & Other	Discretionary budget for unexpected costs	~\$50,000	Discretionary budget for emergencies and additional costs	Project Management Discretion
Annual Operating Costs				
Personnel	Labor and personnel costs	~\$100,000 – \$300,000	Costs decrease post-MVP completion	Project Estimates
Technology Maintenance	Licensing and cloud service fees	~\$20,000	AWS service fees	Amazon Web Services (2024)

Other Operational	Ongoing training and certifications	~\$10,000	Discretionary budget for continuous training and flexibility with compute services form AWS	Project Management Discretion
Annual Benefits				
Cost Savings	Efficiency improvements	~\$130,000	Workflow automation savings in IT & engineering	Workato (2022)
Additional Revenue	Potential revenue increase	~\$100,000	Projected revenue growth of global expansion	Project Forecasts

Table 6: Detailed Cost Estimate

(Amazon Web Services, 2024), (U.S. General Services Administration, 2024), & (Workato, 2022).

Intangible Benefits:

- **Improved Security Posture:** Enhances the organization's overall security framework by providing robust access control and monitoring.
- **User Experience:** Streamlines user access, resulting in improved satisfaction and productivity for both employees and IT staff.
- **Risk Management:** Reduces the likelihood of data breaches and other security incidents, thereby safeguarding the company's reputation with tools like Zero Trust (Balaouras, n.d.).
-

With substantial cost savings, enhanced operational efficiencies, and a proactive response to scaling needs, the system is poised to offer substantial economic benefits over its lifespan, justifying the initial and operational investment.

Organizational Feasibility: “If We Build It, Will They Come?”

The organizational feasibility is promising, considering the positive impact on the company's structure and culture. The project aligns with NCC's strategic goals for global expansion and digital transformation. Stakeholder analysis has shown strong buy-in (del Sol & Ghemawat, 1999), and the implementation of the IGA system is expected to streamline operations and

enhance data security (Balaouras, n.d.), aligning well with the organizational objectives and culture.

Project Requirements

For the development of NCC's IGA system, it is essential to define requirements that align the system's functionality with both organizational goals and user expectations. This involves identifying business needs to pinpoint the strategic objectives the IGA system is designed to meet, user requirements to ensure a positive daily interaction experience, functional requirements that specify the exact actions the software is to perform, non-functional requirements that outline the operational characteristics of the system, and system requirements that detail the technical specifications needed for construction. By adopting this structured approach to defining requirements, we can ensure clarity in the system's objectives throughout the Software Development Life Cycle and lay a solid foundation for its successful implementation. The forthcoming sections will delve deeper into each category of requirements, providing a comprehensive understanding of their significance.

As-Is State

NCC operates with an IGA system characterized by complex integrations and outdated technologies, leading to significant development and testing efforts for new feature implementations. The current system requires extensive interfacing by customers for various business needs, contributing to delays and inefficiencies within the value stream. This system, while functional, struggles to keep pace with the demands of global expansion and evolving cybersecurity challenges, indicating a pressing need for a modernized approach to manage employee access and safeguard sensitive data effectively.

To-Be State

The envisioned IGA system for NCC aims to be a robust, efficient, and scalable solution, as it is fully cloud-compatible to enable global accessibility. It is designed to integrate seamlessly with existing systems (e.g. Active Directory, Azure, and AWS) and to incorporate advanced security protocols, including a Zero Trust architecture. The system will feature automated processes for user access management and real-time monitoring capabilities, significantly improving operational efficiency and data security across the organization. This forward-looking system is aligned with NCC's strategic goals for global expansion and digital transformation, ensuring the company remains agile and secure in a rapidly evolving digital landscape.

Functional Requirements

These requirements capture the critical functionalities and information the IGA must offer to support user tasks effectively. By engaging closely with business users, NCC delineates both the process-oriented and information-oriented demands, ensuring the IGA system comprehensively meets user needs and facilitates their tasks. The preliminary functional requirements have been illustrated in Table 7.

Requirement Type	Description	Requirement Detail
Process-Oriented	Specifications for actions the system must perform to support user tasks.	<ol style="list-style-type: none">1. Automation of user account creation, modification, and deletion.2. Role-based access controls are enforced.
Information-Oriented	Details on the information the system must manage or provide.	<ol style="list-style-type: none">3. Generate compliance reports for audits.4. Provide real-time alerts on unauthorized access attempts.5. Provide event-driven suggestions to suggest review of existing entitlements for an employee transfer.
Combined	Requirements involving both actions and information handling for comprehensive support.	<ol style="list-style-type: none">6. Allow user access requests and profile management via a self-service portal.7. Secure password management and policy enforcement.

Table 7: Functional Requirements for NCC's IGA

(Dennis et al., 2021).

Non-functional Requirements

To address the development of NCC's IGA system effectively, it is critical to consider not just what the system will do (functional requirements), but how it will operate within its environment (non-functional requirements). These encompass the operational context, performance expectations, security protocols, and adherence to cultural, political, and legal standards which ensures the system's reliability, efficiency, and compliance (Dennis et al., 2021). Exploration of these requirements are detailed in Table 8.

Requirement Type	Description	Requirement Detail
Operational	System's required operational and technical environments.	<ol style="list-style-type: none"> 1. Must run on various operating systems, including mobile operating systems. 2. Should integrate with existing systems like active directory. 3. Must be compatible across all web browsers.
Performance	Expectations for the system's speed, capacity, and reliability.	<ol style="list-style-type: none"> 4. User interactions should be processed within 2 minutes. 5. System updates within 24 hours of status changes. 6. Supports 300 simultaneous users during peak times.
Security	Access controls and protections against unauthorized use or cyber threats.	<ol style="list-style-type: none"> 7. Access to sensitive records limited to authorized roles. 8. Advanced protections against malware and data breaches utilizing Zero Trust.
Cultural, Political, and Legal	Requirements driven by cultural, political, and legal considerations.	<ol style="list-style-type: none"> 9. Support for multiple currencies. 10. Compliance with data protection laws and company policies on vendor relationships.

Table 8: Non-Functional Requirements for NCC's IGA
(Dennis et al., 2021).

Business Requirements

While functional and non-functional requirements are of great significance at the tactical level, understanding the organization's business requirements is immensely important at the strategic level. This understanding aligns the workstreams, providing the background leading to the decision to develop a new or modified system in the first place (Young & Grumman, 2002). This insight ensures that project initiatives are closely aligned with the organization's overarching goals and operational needs. For the NCC IGA project, key business needs include requirements around

security, operational efficiency, scalability, and risk mitigation as detailed in Figure 3.

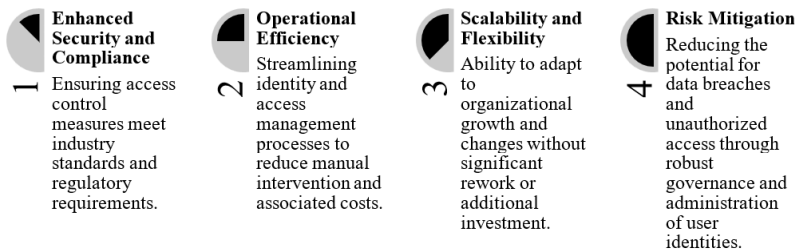


Figure 3: Business Requirements for NCC's IGA
(Dennis et al., 2021) & (Young & Grumman, 2002).

System Requirements

To ensure the NCC IGA project aligns with both operational goals and development standards, the system requirements encapsulate key elements essential for its construction and deployment. These requirements integrate technical specifications with development methodologies to guide the project from conception to launch.

- **Adoption of Agile Methodology:** For iterative development and flexibility in accommodating changes.
- **Microservices Architecture:** For ensuring scalability and ease of maintenance.
- **Continuous Integration/Continuous Deployment (CI/CD):** For automated testing and deployment processes.
- **Comprehensive Documentation:** For system architecture, user guides, and Application Programming Interface references.

User Requirement

User requirements for the NCC IGA system are designed to delineate the specific functionalities and tasks the users will perform. As made evident by Maguire and Bevan (2002), “Understanding user requirements is an integral part of information systems design and is critical to the success of interactive systems.” The requirements, as detailed in Figure 4, are pivotal in shaping a system that is intuitive, secure, and capable of meeting the diverse needs of its users, thereby enhancing productivity and compliance across the organization.

Self-Service Password Reset: Users must reset their passwords independently.
Access Request Submission: Users should submit requests for access to applications and data.
View Access Rights: Users need to view their current access permissions.
Approval Workflow Participation: Managers must approve or deny access requests.
Role-Based Access Control: Users should access resources based on their roles.
Multi-Factor Authentication Setup: Users must set up additional authentication methods.
Audit Trail Review: Audit personnel need to review logs of access and changes.
Report Generation: Users should generate reports on access patterns and compliance.
Profile Management: Users must update their profiles with relevant changes.
Security Alert Response: Users should receive and respond to security alerts.

Figure 4: User Requirements for NCC’s IGA
(Maguire & Bevan, 2002).

The requirements outlined for the NCC IGA system cater to diverse needs—ranging from user functionalities to system build and operational standards—ensuring a robust framework for security and efficiency. This holistic approach by integrating each requirement type sets a solid foundation for developing a system that not only meets today’s needs but is scalable for future demands.

Joint Application Development (JAD) Session

Given the geographical dispersion of colleagues and stakeholders, NCC’s IGA project will benefit from an e-JAD session approach. This method facilitates inclusive and efficient collaboration across different locations, leveraging digital tools to gather requirements effectively. As Dennis et al. (2021) highlights, "Initial research suggests that e-JAD can reduce the time required to run JAD sessions by 50–80%." This efficiency gain underscores the

value of adopting an e-JAD approach for the NCC IGA project, ensuring that despite the geographical spread of participants, the process remains both inclusive and productive.

Information Gathering Techniques

To ensure comprehensive and dynamic participation, e-JAD sessions will incorporate digital brainstorming tools to capture innovative ideas in real time, such as whiteboards. Surveys will be distributed during sessions to gather initial insights and expectations. Several breakout rooms are planned as well to incorporate smaller, more robust conversations. In these breakout rooms, a facilitating analyst will interview stakeholders to obtain relevant details.

Interview Techniques

Utilizing digital collaboration software, the main facilitator will initiate the breakout sessions. Once in the sessions, analysts can interview various stakeholders to confirm and align on the presumed requirements. Despite this virtual environment, the core goal of the JAD interview is the same, to enable "...users with relevant knowledge to work together to accomplish tasks such as effectively deriving quality requirements" (Davidson, 1993).

Questionnaires

With the usage of web-based questionnaires, NCC can establish a baseline sentiment toward several aspects of the "as-is" system and the ~~system~~ "to-be" system. This can be done prior to the e-JAD session, but since this session is being planned, the survey can be initiated and completed during the session while the information and context has been examined universally. Questions that will be included are documented in Figure 5.

1. How do you currently manage identity governance and access within your department?

2. What are the primary challenges you face with the existing IGA system?

3. Which tasks do you perform most frequently that you believe the new IGA system should streamline?

4. Can you identify any specific security features that should be enhanced in the new IGA system?

5. How important is it for the new system to integrate with existing applications and databases?

6. What improvements or additional features would most significantly impact your daily workflow?

7. How do you foresee the new IGA system supporting compliance with regulatory standards?

8. What are your expectations regarding the user interface and experience of the new IGA system?

9. Could you describe the ideal process for requesting and granting access within the new system?

10. What are your key considerations for system performance and reliability?

Figure 5: e-JAD Session Questionnaire
(Davidson, 1993) & (Dennis et al., 2021).

Proposed Format & Facilitation

By emphasizing the structured facilitation of e-JAD, the sessions will utilize specialized software to support anonymous idea submission and collaborative decision-making. The meetings will be hosted in collaboration software and participants will be encouraged to use video technology when applicable. The lead facilitator will be experienced in both group dynamics and the technical aspects of the IGA system. Additional attendees and roles will include analysts, users, executives, observers, and scribes. An agenda has been established, and it is the role of the facilitator to enforce adherence. This agenda has been published in Table 9.

Time	Agenda Item	Duration	Description
9:00 AM	Welcome and Introduction	15 mins	Briefing on the goals and structure of the e-JAD session.
9:15 AM	Background and Context	30 mins	Overview of the existing IGA system and the need for change.
9:45 AM	Stakeholder Expectations	45 mins	Discussion on individual and departmental expectations from the new IGA system.
10:30 AM	Functional Requirements Gathering (Breakout Sessions)	1 hour	Interactive deep dive into desired system functionalities.
11:30 AM	Non-Functional Requirements Discussion (Breakout Sessions)	45 mins	Examination of requirements related to performance, security, and other standards.
12:15 PM	Lunch Break and Informal Networking	1 hour	Casual interaction period for participants. Lunch budget provided by vendor to hybrid and remote staff.
1:15 PM	Review of Gathered Requirements	1 hour	Consolidation and validation of the day's findings.
2:15 PM	Next Steps and Closing	15 mins	Summary of discussions, action items assignments, and scheduling of next meetings.
2:30 PM	Informal Networking & Remote Cocktail Hour	2 hours	Hybrid locations will have in-person event spaces. Remote staff will be able to join a digital lounge for games and socializing. Participation is optional.

Table 9: NCC's e-JAD Session for the IGA System
(Dennis et al., 2021).

Use Cases

Use cases are vital in identifying and validating functional requirements. They provide a scenario-based technique to capture the specific functions the system must perform, helping to clarify the system's intended behavior from the user's perspective (Dennis et al., 2021). This detailed

understanding of user interactions guides the development process and ensures that the design aligns with user expectations and business needs.

Use Case 1: Request Role or Entitlement

At NCC, employees often encounter situations where they require access to new systems or need elevated privileges to fulfill their job responsibilities. The “Request Role or Entitlement” use case outlines the process through which employees can request additional access in a controlled and auditable manner. This process is a critical component of the IGA system, necessitating approval before any role or entitlement is granted. Figure 6 illustrates this use case.

Use Case Name: Request Role or Entitlement	ID: UC-1	Priority: High
Actor: Employee/User		
Trigger: Employee requires additional system access or entitlements for job responsibilities.		
Type: <input checked="" type="checkbox"/> External <input type="checkbox"/> Temporal		
Preconditions: <ol style="list-style-type: none">1. The employee is authenticated through the IGA system portal.2. The Role and Entitlement Management module is available and operational.		
Normal Course: 1.0 Request additional system access. <ol style="list-style-type: none">1. The employee logs into the self-service portal.2. The employee navigates to the 'Request Access' section.3. The employee searches and selects the necessary role or entitlement.4. The employee submits the request with a justification for the access requirement.5. The system routes the request to the appropriate manager or authority for approval.6. Upon approval, the system updates the employee's access rights.		
Postconditions: <ol style="list-style-type: none">1. The employee's access rights are updated to include the new role or entitlement.2. Audit logs are updated with the transaction details for compliance tracking.		

Figure 6: Request Role or Entitlement Use Case
(Dennis et al., 2021).

Use Case 2: Responding to a Security Alert

In responding to security alerts, the ability to act swiftly and effectively is paramount for protecting NCC’s assets. The “Respond to

Security Alert” use case details the protocol for NCC’s security analysts to address alerts generated by the IGA system. It outlines the system’s capabilities not only in detecting potential security incidents but also in providing a clear, step-by-step mechanism for response, ensuring incidents are managed promptly and in accordance with established security procedures. Figure 7 captures these details.

Use Case Name: Responding to a Security Alert	ID: UC-2	Priority: High
Actor: Security Analyst		
Trigger: The IGA system generates a security alert.		
Type: <input checked="" type="checkbox"/> External <input type="checkbox"/> Temporal		
Preconditions: <ol style="list-style-type: none">Security Analyst is authenticated and has access to the security incident dashboard.The Real-Time Alerting and Response system is functional.		
Normal Course: <ol style="list-style-type: none">Handling a security alert.<ol style="list-style-type: none">The Security Analyst receives an alert notification.The Security Analyst reviews the alert details to assess the situation.If the alert is a false positive, the analyst marks it as such and documents the reason.If the alert is valid, the analyst escalates the incident to the incident response team.The analyst follows the incident response protocol to mitigate any immediate threats.The incident is logged, and post-incident analysis is initiated to prevent future occurrences.		
Postconditions: <ol style="list-style-type: none">The incident is resolved, mitigated, or escalated for further action.The security incident log is updated with all relevant details.		

Figure 7: Responding to a Security Alert Use Case

(Dennis et al., 2021).

Test Plan

The development of test cases is a critical phase in software engineering, ensuring that a product meets its requirements and behaves as expected. Test cases can be derived from use cases, which describe the system’s functionality from the user’s perspective (Heumann, 2001). Each use case is broken down into scenarios, from which individual test cases can be identified. These test cases outline specific conditions required to execute a scenario and include data values for thorough testing. Utilizing use cases for generating test cases not only improves the testing process but also integrates

it more closely with the entire software development lifecycle (Heumann, 2001). As use cases define the system's requirements and outline sequences of actions to achieve an observable result, they also inform stakeholders about the product's functionality.

Example Test Case

A potential test case for the "Request Role or Entitlement" use case has been crafted to demonstrate the intersection of functional and security testing realms, incorporating ISTQB guidelines for structured testing. This test case underlines the procedural divergence when conditional approvals come into play. Test cases are just one element of the test plan. Additionally, considerations include the management of test artifacts, scheduling, hardware setup for testing, error tracking, and the careful balance of manual and automated testing to enhance efficiency without overextending resources (Shi, 2010). The details of this test case can be found in Figure 8.

Figure 8: Test Case for Request Approval Flow (Heumann, 2001) & (Shi, 2010).

Post-Hoc Analysis of Use Cases

In the exploration of system design through specific use cases, Figures 6 and 7 demonstrate examples of the workflow and critical sequences of actions within the IGA. The first use case, "Request Role or Entitlement," details the process from an employee's initiation of a request to the culmination of access rights, emphasizing the seamless operational interplay between automated system evaluations and conditional approvals. Conversely, the second use case, "Responding to a Security Alert," reveals the procedural response to security alerts, highlighting the essential roles of security analysts in mitigating threats. These use cases not only underline the relationship between user interactions and system responses, but also necessitate comprehensive test planning to ensure the alignment of system functionalities with user needs and security imperatives.

Process Models

This section introduces the various process models that will be utilized to represent and analyze NCC's IGA system. Process modeling is a critical component of system design, providing a visual representation of the system's components and their interactions (Dennis et al., 2021). The first of these models is a Level 0 or context Data Flow Diagram (DFD), which offers a bird's-eye view of the entire system encapsulated as a single process, interacting with external entities and data flows (Ibrahim & Yen Yen, 2010). Following this Level 0 DFD is a Level 1 DFD which decomposes the system into its fundamental processes, showcasing detailed interactions. Additionally, an Entity-Relationship Diagram (ERD) will detail the system's data structure. Lastly, a data dictionary will be provided to define the data elements within

the models. Together, these artifacts will serve as the blueprints for the development, offering clarity and direction for the project.

Level 0 Data Flow Diagram

The Level 0 DFD serves as a fundamental representation of the system's initial point of interaction with various external entities (Ibrahim & Yen Yen, 2010). This diagram offers a high-level overview, illustrating the essential interactions with Employees, Approvers, Security Analysts, and External Identity Provider entities. The data flow articulates the exchange of information, encompassing entitlement requests, security alerts, approval communications, and access rights updates. These elements are visualized in Figure 9.

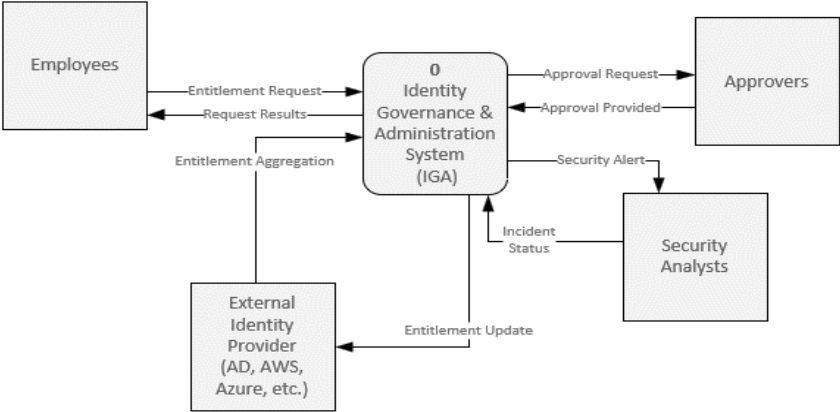


Figure 9: IGA Level 0 DFD
(Dennis et al., 2021) & (Ibrahim & Yen Yen, 2010).

Level 1 Data Flow Diagram

In Figure 10, the Level 1 DFD provides a view of the IGA system's top-level system processes, expanding upon the foundational overview presented in the Level 0 DFD. This diagram shows the data flows and processes integral to the IGA's operation and illustrates the interactions between the external entities (Dennis et al., 2021). It specifies the pathways for entitlement requests, the mechanisms for security alert handling, the processes for approval transactions, and access provisioning.

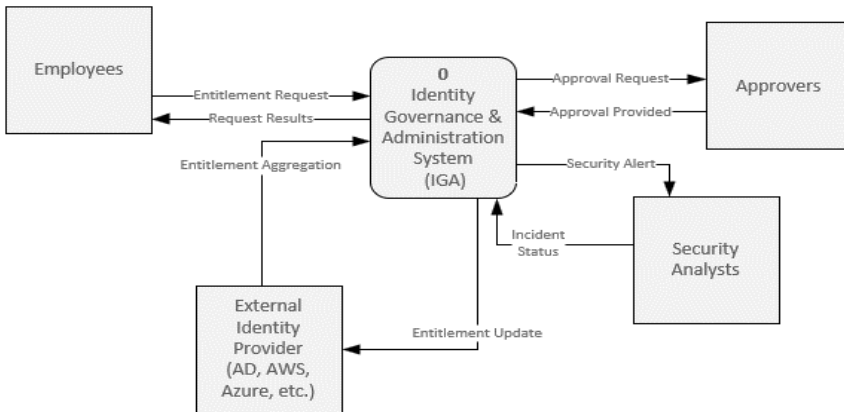


Figure 10: IGA Level 1 DFD
(Dennis et al., 2021).
Entity-Relationship Diagram

The ERD outlines the key components of the IGA system's architecture, highlighting the relationships between users, their access requests, and the approval mechanisms in place. It details how entitlements are managed, the role of identity providers in integrating system components, and the monitoring function of security alerts within the system's framework. The diagram in Figure 11 captures the flow from request initiation to approval, provisioning of access rights, and the oversight of security protocols.

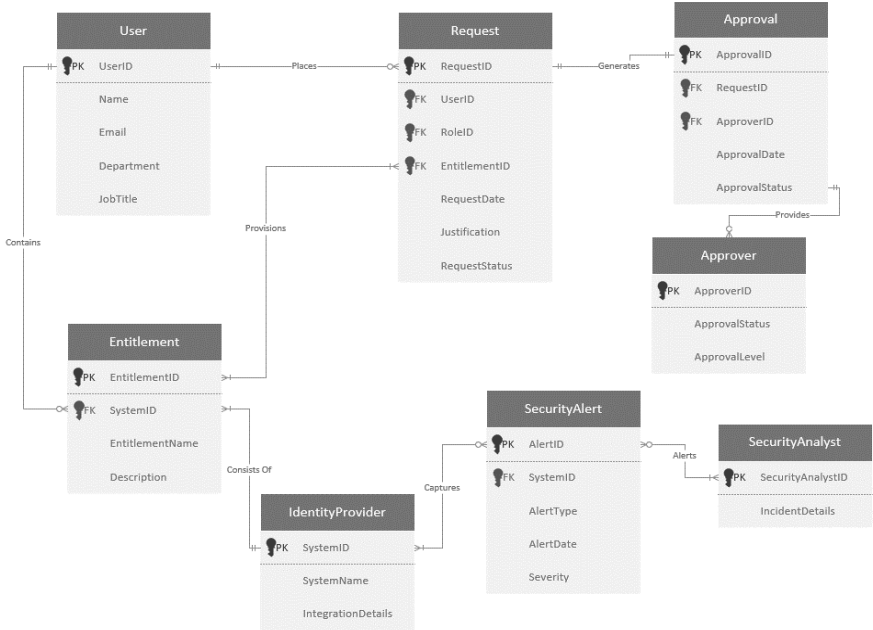


Figure 11: IGA ERD
(Dennis et al., 2021).

Data Dictionary

A comprehensive semantic data dictionary is important for the clear definition and categorization of data elements within the IGA system. This data dictionary serves as a semantic framework that not only defines the attributes and relationships of data elements but also ensures consistency and clarity in data handling practices (Rashid et al., 2020). By providing an authoritative reference, the data dictionary aids in the accurate interpretation of the IGA system's data structures, facilitating better communication among developers, analysts, and administrators and promoting data quality and integrity throughout the system's lifecycle. The fields in this data dictionary display the data elements, field size, data types, a description, and an example. This data dictionary has been drafted and displayed in Table 10.

Data Element Name	Size	Data Type	Description	Example
UserID	7	char	Unique identifier for a user, following the pattern User initials followed by a [5-Digit Number].	JD12345
FirstName	50	string	The user's first name. Must be non-empty and capitalized.	JANE
LastName	50	string	The user's last name. Must be non-empty and capitalized.	DOE
UserName (Composite Element)	101	string	Represents the full name of a user, combining the first name and the last name with a space in between. This is a composite element derived from concatenating FirstName and LastName .	JANE DOE
UserEmail	50	string	Email address of the user in standard email format with ncc.org as the domain and the first and last names concatenated with a period.	jane.doe@ncc.org
User Department	25	string	Department where the user works, capitalized.	SALES
JobTitle	20	string	The user's job title within the system, capitalized.	MANAGER
RequestID	8	char	Unique identifier for a request, following the pattern REQ[5-Digit Number], in ALL CAPS.	REQ12345
RequestDate	10	date	Date when the request was placed, in the format YYYY-MM-DD.	2024-01-01
RequestStatus	30	string	Status of the request, with possible values such as PENDING, APPROVED, or DENIED, in ALL CAPS.	APPROVED

Data Element Name	Size	Data Type	Description	Example
ApprovalID	7	char	Unique identifier for an approval, following the pattern AP[5-Digit Number], in ALL CAPS.	AP12345
Approval Date	10	date	Date when the request was approved or denied, in the format YYYY-MM-DD.	2024-01-01
Entitlement ID	15	char	Unique identifier for an entitlement, following the pattern ENT[5-Digit Number], in ALL CAPS.	ENT12345
Entitlement Name	60	string	Name of the entitlement, capitalized. Formatted in NCC standard NCC-<app>-<role>	NCC-IGA-Developer
Entitlement Description	100	string	Detailed description of what the entitlement allows or restricts.	Developer access to IGA
Security AlertID	8	char	Unique identifier for a security alert, following the pattern ART[5-Digit Number], in ALL CAPS.	ART12345
AlertType	30	string	Type of security alert, with possible values such as SYSTEM, ACCESS, NETWORK, etc., in ALL CAPS.	SYSTEM
AlertDate	10	date	Date when the alert was triggered, in the format YYYY-MM-DD.	2024-01-01
Security AnalystID	7	char	Unique identifier for the security analyst, following the pattern SA[5-Digit Number], in ALL CAPS.	SA12345

Data Element Name	Size	Data Type	Description	Example
Incident Details	2000	text	Comprehensive description of the security incident, including the nature and impact of the incident.	Issue: Orphaned entitlement Priority: High Notes: Received alert and reached out to Jane Doe in sales for details

Table 10: IGA Data Dictionary
(Rashid et al., 2020).

The IGA system's data dictionary is pivotal for ensuring unambiguous data interpretation and consistent application across the platform. It reinforces data quality, aids in system scalability, and supports secure operations. Drawing on the principles of semantic clarity outlined by Rashid et al. (2020), the data dictionary serves as a fundamental tool for developers, analysts, and administrators, promoting a shared understanding and facilitating accurate data governance. Through this essential documentation, the IGA system is equipped to handle the dynamic demands of data management with precision and integrity.

Conclusion

The system proposal for NeuroComputing Corp's new Identity Governance and Administration system has been evaluated for feasibility, with positive outcomes across technical, economic, and organizational aspects. Technically, the system is well within the company's capabilities, integrating with existing technologies and aligning with the Agile framework. Economically, the detailed cost-benefit analysis, showing a robust ROI and a positive NPV, supports the system's financial viability, with clear projections outlined in Table 6, including development and operational costs versus anticipated savings and revenue enhancements.

The system's requirements are detailed and encompass a wide array of functional specifications. These include automated user account management and real-time security monitoring, alongside non-functional requirements ensuring system performance and security protocol adherence.

Notably, the requirements detail the integration with existing systems such as Active Directory and Azure, enhancing operational effectiveness and security. Furthermore, data models play a crucial role, with the Level 0 and Level 1 Data Flow Diagrams providing a macro and micro view of the system's processes, and the Entity-Relationship Diagram detailing the system's data architecture. The data dictionary further complements these models by defining data elements clearly, ensuring consistency and clarity across the system's lifecycle. Incorporating the insights gathered, this report conclusively affirms the strategic, operational, and technological viability of the proposed system.

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Endnotes

- ¹ “ISTQB is the leading global certification scheme in the field of software testing.”
<https://istqb.org/about-us/what-we-do>
- ² “PMI is the world’s leading authority on project management.”
<https://www.pmi.org/about>
- ³ “The Open Worldwide Application Security Project (OWASP) is a nonprofit foundation that works to improve the security of software.”
<https://owasp.org/about/>
- ⁴ “[Github’s] style guide aims for simplicity. Guidelines should be easy to apply to a range of scenarios.” <https://docs.github.com/en/contributing/style-guide-and-content-model/style-guide>
- ⁵ “A specification defining a graphical language for visualizing, specifying, constructing, and documenting the artifacts of distributed object systems”
<https://www.omg.org/spec/UML/>
- ⁶ “Scrum is a framework for developing and sustaining complex products.”
<https://scrumguides.org/>
- ⁷ “Extreme Programming is successful because it stresses customer satisfaction.”
<http://www.extremeprogramming.org/>

Being Of Old Slow To End War: A Game Theory Analysis of the Final Months of 1914 And Why Wars Don't End

Logan A. Louden

Abstract

The central question of World War I is why a conflict no one wanted lasted beyond 1914. Despite the Kaiser's promise that the guns of August would fall silent before the autumnal leaves fell, the war persisted. The chaotic and controversial July Crisis set the stage, but it was the events of late 1914 and the continuation of hostilities that ensured the conflict would dismantle European hegemony, topple four empires, and lay the groundwork for World War II and the Cold War, cementing the summer of 1914 as Europe's last. By applying game theory—an analytical tool typically used predictively in political science, evolutionary biology, and economics—we explore its descriptive power in detailing the reasons behind the prolonged conflict. Game theory assumes the rationality of the decision-makers of late 1914 to formally describe both their choices and optimal strategies. This application in a systematic model reveals the underlying strategic calculations (and miscalculations) that extended the war well beyond its predicted duration, providing an understanding of the factors that perpetuated the conflict. By interpreting the results through this lens, this study contributes to the larger field of historical conflict analysis, offering insights that are applicable to both historical and modern-day conflicts, as well as testing current models of war termination in a real and well-studied conflict.

The Lacedaemonians, though fully aware of it, opposed it only for a little while, but remained inactive during most of the period, being of old slow to go to war except under the pressure of necessity, and in the present instance being hampered by wars at home; until the growth of Athenian power could be no longer ignored, and their own confederacy became the object of its encroachments. - Thucydides, 5th Century, BCE¹

Introduction

In 2019, Shawn Faulkner and Scott Stephenson were asked why, after their lecture on the First Battle of the Marne, the war continued after the devastating losses of late 1914. What could have possibly compelled the belligerents to continue, given their knowledge that a long war would destroy their economies and a generation of men? They argued the sunk cost of those sacrifices compelled both coalitions to continue the war, to make those sacrifices possible.²

On the face of it, this seems like an unsatisfactory answer. Had both factions truly fallen for such a trivial logical error? There are many tragedies of World War 1, but if true, this might be the most affecting. A case for forgiveness could be made if the belligerents, seeing the destruction wrought by industrial warfare, had negotiated in late 1914—no one could have imagined that carnage without experiencing it. The case becomes much weaker by the end of 1918.

Instead of committing a logical fallacy, can it be shown that the continuation of the war by both sides was, in fact, rational? The emerging field of game theory might be utilized here to examine the strategic choices both sides face and make sense of their actions. Much work in game theory on war termination in general has already been done. In 1979, for instance, Donald Wittman's model presented a case for rational decision-making, explicitly stated for conflict resolution. James D. Fearon, in 1995, further defined conditions for war termination. In the 21st century, Darren Filson and Suzanne Werner proposed a comprehensive model in a standard format to explain how wars end. Today, political science professor William Spaniel's YouTube channel, which covers the current conflict in Europe with biweekly uploads and a viewership of hundreds of thousands of subscribers,³ applies these theories to specific and demonstrable case studies. Here, however, we will apply these concepts and principles retroactively on a war with a known end date and, using these tools, determine why it did not end sooner given the popularly held 'irrationality' of the four-year-long conflict.

Overview of Game Theory and its History Concerning World War I

As we know it today, game theory, the math of strategic choices, began over a poker game. John von Neumann, a polymath who accelerated the development of the nuclear bomb, the invention of the computer, and the structure of DNA, was attempting to figure out the most rational response of a poker player with imperfect information.⁴ In 1928, he published "On the Theory of Games of Strategy"⁵ and became the father of game theory.⁶ Game theory has important and wide-reaching predictive power in evolutionary biology, public policy, political science, and economics. It also has been used in

military contexts, which we will cover, but in the discipline of history, it is not as deeply rooted, so a brief overview of concepts will be helpful.

As game theory seeks to quantify decisions, often the utility of the options available to a player (someone or thing who makes decisions and/or follows a strategy) will be given a variable. Often, the actual values of the variables are not important. Game theorists may find important value in the relationship of variables. If one variable going up causes another to go down, or stay the same, that can be interesting and say something about not only the strategy of the players, but the game itself. While single-player game theory exists, the vast majority is between multiple players (and usually specifically two). In games, even zero-sum ones, it is important to remember that players will seek to maximize their own utility, regardless of the score of their opposite (unless their opposite having more utility than themselves in fact gives negative utility, though that dynamic should already be factored into the game). For instance, if there is a game where you have to decide between you receiving \$99 and the other player receiving \$0, or you receiving \$100 and the other player receiving \$1,000, you should always choose the second option.

Often, games like these are repeated or iterated. In game theory, players remember past interactions and may adjust their strategies accordingly. However, it is assumed that future interactions matter less than current ones. If you played our hypothetical (and very generous) game every year, the \$100 you would get in ten years is worth less than the \$100 you get now. You or the other player may die, I may run out of money, the rules themselves may change, the collapse of the dollar might occur, etc., and thus game theory discounts future payoffs with small delta, or δ . δ is a number between 0 and 1 exclusively and represents how much you value the future. If you think the other player is soon to leave the game, or the currency will collapse, you may not value the \$100 as much in 10 years, and thus δ will be low. However, if you have high expectations that you will make it to 10 years (both you and the other player are young and healthy, the currency seems stable, etc.), then you would have a high δ value. The calculation is *amount* times δ^t , where t is the time period or round in the game. So, if you get \$100 now, in 10 years time (10 periods), if you, say, value δ at .5 (that for each period $t + n$, you value the result at only half of $10 \cdot (0.95^{10}) \approx 59.8737$) then you value that money at $\sum_{t=0}^{\infty} \delta^t (C - I)$, or about a dime. If, however, you set δ at .95 (meaning you value the future a lot), you get $10 \cdot (0.95^{10}) \approx 59.8737$, or \$59.87, a much better outcome.

We should also briefly consider World War I's influence within game theory. Robert Axelrod's famous work both in political science and, with W. D. Hamilton, evolutionary biology, culminated in *The Evolution of Cooperation*, featuring an entire section on tit-for-tat, a famous game theory strategy in an iterated game of Prisoner's Dilemma, in the context of the trench system and

the Christmas Truce.⁷ Frank C. Zagare in 2011 did something of the reverse of our inquiry and used game theory to explore the beginning of the conflict.⁸ The war was even used as the entire premise for teaching the ideas behind game theory by Scott Wolford in his 2019 textbook.⁹ For our purposes, however, James D. Fearon's use of the Great War in his seminal work "Rationalist Explanations for War"¹⁰ is the most pertinent. While not primarily focused on the conflict, the paper uses the war in multiple examples, more than any of the other wars mentioned combined. And it is in Fearon's work where we will focus on our last game theory lesson, this time specifically dealing with the central paradox of war and how states internalize costs on actual maps.

Fearon notes that there is a seeming paradox for game theory and the existence of war. He writes,

As long as both sides suffer some costs for fighting, then war is always inefficient *ex post*—both sides would have been better off if they could have achieved the same final resolution without suffering the costs (or by paying lower costs). This is true even if the costs of fighting are small, or if one or both sides viewed the potential benefits as greater than the costs, since there are still costs. Unless states enjoy the activity of fighting for its own sake, as a consumption good, then war is inefficient *ex post*.¹¹

War, in game theory terms, therefore has quite a bit of utility to overcome. Fearon (building on a lot of work we will cover in a moment) contends that this can all be boiled down into proverbial "lines on maps," with disparate variables such as human cost, political will, and future expectations of battle outcomes all being representable by territory gained (or any metric one wishes to use).¹² It is a subtle claim, and not the focus of the paper, but it allows for a more nuanced and wide-ranged analysis, of which we will take full advantage.

Contextual Analysis of Late 1914 and the Promise of a Short War

Before we begin to look at war termination theories, we must quickly consider the context of late 1914. This allows us to apply our upcoming hybrid theory to test the variables surrounding the last time the conflict could be limited to an 1870-71 Franco-Prussian sized war, keeping it from becoming an industrial-powered, worldwide, Napoleonic War. The assumptions of policymakers generally about the war will be examined and a brief position of the pieces on the metaphorical chessboard will outline the backdrop to game theory, rationalizing and quantifying the problem at hand. That the war would be short was believed by nearly every major decision-maker. Kaiser Wilhelm reportedly told his troops leaving for war that they would be home before the leaves fell.¹³ There were a few who had inklings of a long war; Fredrick

Engels in 1887 commented,

And, finally, the only war left for Prussia-Germany to wage will be a world war, a world war, moreover, of an extent and violence hitherto unimagined. Eight to ten million soldiers will be at each other's throats and in the process they will strip Europe barer than a swarm of locusts. The depredations of the Thirty Years' War compressed into three to four years and extended over the entire continent; famine, disease, the universal lapse into barbarism, both of the armies and the people, in the wake of acute misery; irretrievable, dislocation of our artificial system of trade, industry and credit, ending in universal bankruptcy; collapse of the old states and their conventional political wisdom to the point where crowns will roll into the gutters by the dozen, and no one will be around to pick them up...¹⁴

This is prophetic but is well before the time we are looking at. Sir Edward Grey, Britain's Foreign Secretary, famously noted, "The lamps are going out all over Europe, and we shall not see them lit again in our lifetime,"¹⁵ but this was on the cusp of war, and Grey had cause to be melancholic, as he had tried to keep Albion neutral. Other British voices were much more optimistic. The world of 1914 had been informed by the likes of Norman Angell and his book *The Great Illusion*, which argued that any war would be so disruptive to trade and the economy that it could not be sustainable for any length of time.¹⁶ His counterpart in Russia, Jan Gotlib Bloch (Ivan Stanislavovich Bloch in Russian), also contributed to the idea that the agricultural and manpower devastation (along with similar economic concerns) meant that while military leaders may desire a long war, it simply would not be feasible.¹⁷

By 1914, in fact, not only was the idea of a long war deemed impossible, but even a short war was considered unlikely. As well, the political climate gave no hint of the coming tempest. As late as May 1914, permanent undersecretary of foreign affairs Arthur Nicholson wrote "Since I have been at the Foreign Office I have not seen such calm waters."¹⁸ The shadow of the future seemed unusually short. After the Battle of the Marne, both sides began to dig into the earth in earnest, forming massive trenches to reduce battlefield casualties and thus reduce cost.¹⁹ This drastically lowered the men necessary to hold a position and thus reduced casualties from the open warfare of the Frontiers and the Marne.²⁰ The front, at least in the west, was now established, with an expectation of a short war, and, at least by the end of 1914, a much lower rate of casualties than the start of the war. The rate of change of costs was decreasing, and the expectation that those costs would continue was extremely low.

Models for War Termination

A review of the literature surrounding war termination utilizing game theory comes to us from the ashes of World War II when the discipline *in toto* was coalescing. Specifically, this early focus on rationality was in response to the existential threat nuclear war posed. The discipline itself emerged from an earlier quandary of the same type, though somewhat quaint by modern standards of nuclear ordinance: conventional strategic bombing. The phrase “the bombers will always get through”²¹ is the cold crucible from when modern nuclear war theory began. Grim calculations, pioneered by physicist and futurist Herman Kahn, brought game theory concepts such as MAD and NUTS to the forefront of American understanding of the new atomic reality (as well as such other eldritch terms like “megadeaths”²² and “dead hand”). But when nuclear fire did not manifest, a second generation of game theorists began to write about the end of more traditional wars which, though no longer on the scale of the world wars, showed no signs of abating. Much like Clausewitz’s concepts of total war and war by algebra, these were largely theoretical and designed to explain trends and forces rather than offer explanations for specific wars. Here, we will consider the history and conclusions of this second generation, arguing that no single formulation can be universally applied, though each provides the tools necessary to construct a new theory for specific wars and our focus, World War I.

Our first model comes at the tail end of the 1970s. Donald Wittman’s foundational premise is simple: “[a]n agreement (either explicit or implicit) to end a war cannot be reached unless the agreement makes both sides better off; for each country the expected utility of continuing the war must be less than the expected utility of the settlement.”²³ Like much of game theory, Wittman’s model relies on utility to each side in regards to continuing or ending a war. Wittman places both on a spectrum, with the unconditional surrender of either side on opposite ends, and plots the expected utility of war termination at time (t) for each side. If the expected utility of war termination is greater than the expected utility of victory times, the internalized estimation of the chance of said victory (P), we can expect them to seek a settlement. If this is also true of the other belligerent, an explicit or implicit peace is likely.

Wittman’s work laid much of the foundation for war termination theory. For instance, Wittman points out that changes to P do not necessarily mean a negotiated settlement is more likely. If, for instance, Country Y’s chances of victory decrease, this does not correlate to an end to the conflict. This is because as P drops for Y, $(1 - P)$, the chances of victory for Country X, Country Y’s opponent, will likely (though not necessarily) increase; so too will the utility required to satiate this updated calculation. What was once

acceptable war termination numbers at $t - 1$ are no longer, and no peace is expected under the theory.²⁴ Wittman himself starkly notes "... such phrases as, 'We are bombing them in order to bring them to the negotiating table'; 'all we want and have ever wanted in a negotiated settlement is ...'; 'the better we do the more the enemy will come to terms and the sooner we will reach a settlement,' should be taken with a grain of salt, for the better 'we' do the more we will demand."²⁵

Wittman also concludes that a "reduction in the intensity of the fighting"²⁶ counter-intuitively may lower the chances of a settlement. As the expected costs go down—from fewer battle casualties, less material loss, and less political capital loss from those numbers being reported—the expected utility from continued hostilities at $t + 1$ actually increases as long as P does not decrease (or $(1 - P)$ for the opponent).²⁷ This is especially important for the model we shall construct, as the opening months of World War I were especially brutal; by the end of 1914, Allied casualties were estimated at 1.14 million on the Western Front alone,²⁸ but the move from open fighting to trench warfare, brutal as the latter was, lowered the costs. This is the first puzzle piece game theory sets into place—battlefield changes altered the game such that there was less utility cost in continued fighting. While we are specifically looking at the period right after the Battle of the Marne, before trench warfare could prove its worth in lowering the costs of fighting, this is still an important explanation for why the war lasted as long as it did. In fact, only until 1918 when casualty figures reached what they were in 1914²⁹ did a settlement become more likely and in fact did happen. When δ and costs were high enough, a settlement was not far behind.

While we touched upon Fearon's ideas earlier, it is relevant to identify his importance here and consider his model more closely. Again, remember Fearon's fundamental paradox concerning war, that it is inefficient and *prima facie* irrational.³⁰ In other words, both sides, if they knew the specific settlement of a war, would prefer to jump straight to that settlement, regardless of what it looked like, than receive that settlement *and* pay the costs of war. Yet, of course, wars still occur. If game theory is to be of academic value, it must have a response to this seeming paradox; rational actors would avoid war and accept settlements if they had an accurate assessment of their enemies and their own capabilities (we might even see here echoes of Sun Tzu, who claimed that in knowing the enemy and knowing oneself, one would never be in peril in battle³¹—there would be no battle fought if both sides had worked out the game theory strategy beforehand!).

To solve this paradox, Fearon posits three arguments in response (he cites two more that only partially explain this phenomenon, as well). Firstly, "rational leaders may be unable to locate a mutually preferable negotiated settlement due to *private information* about relative capabilities or resolve and

incentives to misrepresent such information.”³² Put simply, in the calculus about changes to the status quo, actors may have knowledge (usually about their own position) that the other side does not, and, interdependently, have reason to lie about that information. Secondly, commitment problems may make it impossible to ensure neither side reneges on the bargain upholding peace. Finally, an idea that Fearon admits is less compelling is the idea of *issue indivisibility*, that “some issues, by their very natures, simply will not admit compromise.”³³ The lessons he draws can not only inform our own formulation, but his influence stretches to all future works in war termination game theory we will consider.

Finally, we turn to Darren Filson and Suzanne Werner’s model, which attempts to connect war initiation and termination in a single framework. Their work is far more ambitious than Wittman’s, forwarding a proposal-rejection-battle cycle in standard form, including several decision nodes for each failed proposal. Interestingly, Filson and Werner’s model is not simultaneous, as the defender nation (*D*) takes its turn after the attacker’s (*A*) proposal. As they put it, “[a] war consists of an alternating sequence of negotiations and battles.”³⁴ Pulling explicitly from Fearon, Filson and Werner rely on the hidden information of the defender’s capabilities. Ultimately, as the war continues, the attacker updates their beliefs about the defender’s capabilities and positional strength. The defender, meanwhile, is seeking only to maintain the status quo but has little ability other than outlasting the attacker.

Filson and Werner maintain that their model provides eleven conclusions, perhaps most importantly that short wars favor the attacker and long wars favor both the defender and peace, but for our purposes, it is not sufficient to explain why World War I lasted as long as it did. While Filson and Werner’s framework is certainly comprehensive, it seems most explanatory when dealing with symmetrical (which World War I mostly was) and non-coalitional (which World War I certainly was not) wars. Furthermore, the very foundation of the model, that of an attacker making some sort of demand upon the defender, does not fit well over the July Crisis, as most belligerents sought the status quo and the only one which didn’t (Austria) specifically sent a proposal purposefully designed to fail and may very well have rejected *any* response by Belgrade.³⁵

However, even for a conflict as unorthodox as the Great War, Filson and Werner’s model provides excellent resources for a more tailor-made framework. They not only have a much more focused representation of initial resources (*R*),³⁶ but also a clearly defined relationship between expectations of victory factoring into war costs.³⁷ Their model represents a clear evolution

from von Neumann's poker game and even Wittman's formulation of game theory on war termination. With this framework, and that of Fearon's and Wittman's, we have the tools necessary to construct a hybrid model for explaining the military and diplomatic situation at the end of 1914.

Our model will draw significantly on the idea of cost, specifically expected cost. The politicians and generals who reluctantly went to war were not completely blind to the potential costs of conflict. Therefore, borrowing from Filson and Werner, we begin with R , or a state's resources. In a modern context, we might think of Russia's infamous war chest that was growing leading up to its 2022 invasion. In 1914, it might include the industrial stored capacity of the Great Powers, the British expeditionary force, the Imperial German Army, etc. Each state will begin with this and draw from it to wage war.

Next, we will model the benefits of victory. V represents whatever a belligerent is hoping to gain from the conflict, even if that is maintaining the status quo. Modifying that, we will use Wittman's P , though we will use more modern conventions and use the Greek letter omega, or ω , but it is the same as Wittman's formulation—some number between 0 and 1, representing the state's internalized estimation of victory. ωV is the benefits of victory, tempered with the uncertainty of that victory. We add this to R .

The costs of fighting will be the most complex to model. Firstly, we will assume that war will have at least some military action—declared wars that are resolved before any casualties may still be wars, but unfortunately our model will not represent them well. So, one fight at least will occur, represented by C (in our model, this will be accomplished by setting t equal to 0, ensuring at least one unit of C will be multiplied by 1). We will add to this the expectation of future battles. We don't know how many future battles there will be, so we will utilize the aforementioned discount variable, or small delta (δ). We'll add all those battles together with summation notation, giving us, for cost:

$$\sum_{t=0}^{\infty} \delta^t (C - I)$$

In layman's terms, C represents the per-period cost of fighting. We have included industrial capacity to be subtracted from cost with I . Think of this as added resources over the course of the war—factories pumping out material, men coming of age to join the front lines, etc. I is also a per-period t value.

$$R + \omega V - \left(\sum_{t=0}^{\infty} (\delta^t (C - I)) \right) \geq 0$$

Finally, we set this whole equation to equal or greater than 0. If it is less than 0, we are running a resource deficit, indicating our prediction of a failed war, one which a rational actor would stop at the first opportunity. Combining these together, we get:

$$R+\omega V-\left(\sum_{t=0}^{\infty} \delta^t(C-I)\right) \geq 0$$

Keep in mind this calculation will constantly be updating in the minds of policymakers of the belligerents and, as long as it remains true, a rational actor who believes the war can still be waged. This formulation gives us a working model for what the decision-makers of 1914 considered a sustainable conflict. Finally, we can also express the above inequality as a geometric sequence, which simplifies to:

$$10-\sum_{t=0}^{\infty} 0.1^t=8\frac{8}{9}$$

This is true so long as $0<\delta<1$, or, more conventionally, $|\delta|<1$, which is in fact true in our case, as δ represents a discount value. This formulation will be easier to manipulate algebraically should we desire to do so.

Application of Models to 1914

A larger, “trends and forces” approach to the causes of World War I imply an Allisonian Thucydides’ Trap.³⁸ The rising power of Germany threatened the status quo of Europe and did so in a shockingly quick way. By the stroke of a pen on January 18, 1871, the largest land power in the world declared itself into existence. One could even extend the argument that the rising power of Serbia contested the waning power of Austria. France, England, and Russia, the established powers, wanted to reign in a surging Germany (and Austria a reticent Serbia). Ruling powers, in the face of new, rising powers and changes to the existing political framework, found themselves in a position, or trap, where preemptive war seemed like the only option to maintain the status quo. It is this idea of fighting a war to maintain the status quo where we will first look.³⁹ What Allison and Thucydides both argued is a form of a commitment problem.

We touched upon commitment problems with Fearon, but a proper definition is called for. Robert Powell states it thusly:

[t]he crucial issue in commitment problems is that in the anarchy of international politics, states may be unable to commit themselves to following through on an agreement and may also have incentives to renege on it. If these incentives undermine the outcomes that are Pareto-superior to fighting, the states may find themselves in a situation in which at least one of them prefers war to peace.⁴⁰

In other words, agreements have to be self-enforcing, or no state can be expected to maintain it *even if* it is beneficial to them or if they think the opponent might renege. While this is largely used to describe how wars begin, it can be useful to see why they end, or more importantly, might not end. Under this view (which also oddly places the blame for war on the Triple Entente), Britain, France, and Russia did not solve the underlying issue of German ascendancy. While they had the resources to fight, they then were incentivized to continue that fight until they could restore the status quo of a pre-German Europe (a result they would achieve at the end of World War II). In this scenario, Germany, seeking to maintain its upward trajectory, would prefer not to have war (as Fearon notes, war is inefficient, and Germany was better at allocating its resources, hence its ascendancy).

This, however, does not align with the facts. German military plans called for a wide escalation of the war.⁴¹ It was German reluctance to start an international conference to deal with the growing July Crisis.⁴² Britain especially was reticent to enter the war—even by early August, before Belgian neutrality had been violated. France could provide the justification—revanchism was strong in the Third Republic to reclaim Alsace and Lorraine. Those claims, and the political humiliation of Belgrade, might be considered the only pre-war victory conditions of any of the major belligerents. But of the Triple Entente, France was the most passive. Russia and Britain took far more active steps to escalate their commitment to enter the war (though, in the case of the U.K., it still did not desire that war).

The only true commitment problem faced by both belligerent coalitions was that of separate peaces. All sides dealt with allies potentially ending their role in the conflict early, a problem exacerbated by the inability of already warring parties to enforce agreements of collective peace. For instance, Great Britain, and to a lesser extent, France,⁴³ worried greatly over inviting the erstwhile third member of the Central Powers, Italy, to join them. Prime Minister Asquith thought the matter was important enough to grant every Italian demand simply for the promise not to sign a separate peace; as he wrote to King George V, “[t]he importance of bringing Italy without delay

appears to be so great that it was agreed to give a general consent to what she asks and to press Russia to do the same provided the Italians will agree to bring all their forces into the common stock against all our enemies (including Germany) and will bind themselves not to make a separate peace.”⁴⁴ Germany, too, constantly worried about the Austro-Hungarian Empire in its death throes, to the point that it largely took over control of the Habsburg Empire (as Thomas Otte points out, Austria’s declaration of war against Serbia was the last independent political act of a Habsburg, a dynasty which lasted as a head of state of Europe for over six hundred years).⁴⁵

In our focused model, commitment problems would be a manipulation of the V variable, modifying the benefits of victory. If the incentives of V were significantly larger than the costs (and the chance of victory was not especially low), war continuation should be expected. But commitment problems in this sense do not explain the continuation of war here. War had been avoided before, in other crises. In 1914, there was no special commitment problem that surfaced compared to previous crises.⁴⁶ In fact, given the fear of a separate peace, the commitment problem worked in the opposite direction; no country wanted to be caught holding the metaphorical bag and being the last one in their coalition left in the conflict, a situation Britain would find itself in after the fall of France in 1940.

Lower δ Values and the Problem of Belief in a Short War

While nearly every aspect of the Great War is controversial, one which is less so is the idea of a short war. As covered earlier, policymakers on both sides believed the conflict would not (and, in fact, could not) last long. In our model, we might say that the shadow of the future was not long for the politicians and generals of Europe of 1914. This means a change in δ , or the discount factor. How might this affect war calculations?

Let’s put in some numbers and test different values of δ . We’ll imagine one of the belligerents begins the conflict with 10 resource units and each period of t costs 1 unit (for simplicity, we will assume industrial capacity is already factored into the cost, so $C-I$ is just C). We’ll also forgo victory payoffs for now. Thus, we arrive at:

$$10 - \sum_{t=0}^{\infty} \delta^t$$

If we expect a short war, our estimation that the chance the war will last at least until $t + 1$ is, say, 10%, (and the subsequent period after that has a 10% of the war continuing to $t + n$), we might put 0.1 as δ , and thus:

$$_{t=0} 10 - \sum_{t=0}^{\infty} 0.1^t = 8 \frac{8}{9}$$

Meaning, if we stalemate, we can expect to exit the war paying only 10/9 units. If, however, we anticipate a long war and expect the war to continue into $t + 1$ with a probability of 95%, we would instead arrive at the horrible outcome of -10, an amount that would ruin us unless the victory payoff was massive and assured. Incidentally, in this scenario, estimating war at $t + 1$ at a 90% probability equals zero—we would just break even (see fig. 1 for the entire distribution).

In other words, the discount factor δ is used to represent how future costs are valued compared to current costs. Generally, if a country believes there is a low probability of the war continuing, it will discount future costs more heavily, resulting in a lower δ . Conversely, if the country expects a prolonged conflict, it will place more importance on future costs, leading to a higher δ . For example, a δ of 0.5 might be used if there is a perceived 50% chance of the war continuing each period, whereas a δ of 0.1 or 0.9 would reflect lower or higher perceived likelihoods, respectively. It should be noted that while there is typically a correlation between the perceived length of the war and the discount factor, this relationship is not strictly causative. There may be cases where a country internalizes future costs differently than expected based on the anticipated duration of the conflict. However, none of these seem to apply to 1914.

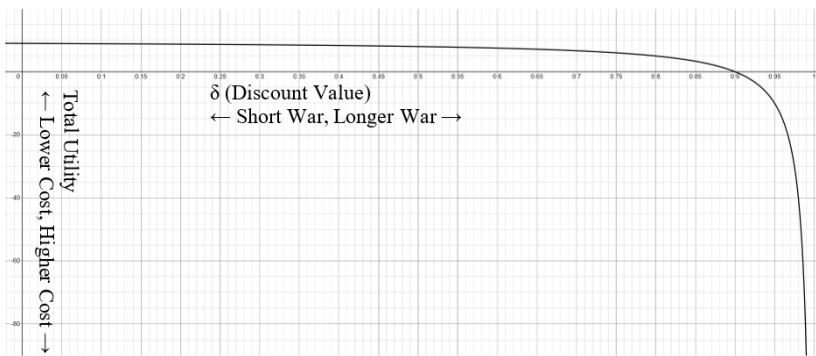


Figure 1: This graph shows the distribution of all values of δ in relation to cost. As the expectation of a long war increase, the expected utility drops precipitously off after a δ of .9.

Image courtesy of Desmos (desmos.com)

This alone presents serious problems for the “war ending early” theory. Ironically, believing that a war will be short can increase its length. Given the predictions of Angell and Bloch we saw earlier, a general sense of a short war, a war that, mathematically, *must* be short, counterintuitively pushed both sides away from the bargaining table—the cost was large, but the huge downward push on δ made those losses seem sustainable. The decision-makers had such a devalued vision of the future in their belief that whatever the outcome, the war couldn’t continue. This meant that until the real value of δ was discovered, there was a rational model where continuation, especially with, as we will look at soon, V values made to fit an equation solved for C . Even for the United States, which in fact could, *ex post*, justify a relatively low δ , the notion that δ must be low had by 1917 and America’s entry been shattered. More realistic δ values were used. Winston S. Churchill even mentions in his history of World War II that British plans were finally stretching out to year-long commitments to escalate the war.⁴⁷

Solving For C

Another seeming *ex ante* mistake displayed in our model was the V values for most belligerents, at least upon their entry into World War I. Only the Austrians and French could point to actual concrete war aims, the humiliation of Belgrade and the recapture of Alsace and Lorraine, respectively. Yet even there, France did not start the conflict to retake their lost 1871 territories, and Austria would argue it was forced to retaliate due to Belgrade provocation. So, our belligerents’ V values were not simply low, but largely undefined.

The known variables were thus each nations own R and I values and were furthermore largely fixed (R especially so and I only changeable slowly, and at great expense taking away from the war effort). The last variable, C , was shockingly found out in the period we are looking at, so it is natural to assume the political and military leadership began informally solving our model for C . Using our geometric sequence formulation from earlier, we arrive at:

$$R - \delta R + \omega V - \delta \omega V + I \geq C$$

Here is another key to understanding the crisis facing the political leadership of the belligerents. Unable to meaningfully change I , R , or the new, terrifying C , and with ω largely in the hands of their military, politicians and leaders could only consider V and δ .

With rising C values, a higher V or a lower δ could keep the equation in balance. While this did indeed lead to higher V expectations (to the point that when the Bolsheviks took over in Russia and published Allied war aims, it was a massive political blow to their leadership, especially to neutrals, for the audacity of it—we can now better speculate as to why V had to be so high), we again see a desperate attempt to internalize δ as being low. But as we showed earlier, artificially low δ led to *longer* wars and served as an impediment for peace. Attempting to solve the equation for C , trying to “balance the books” given the rising costs, meant leaders were hoping, *and acting as if it were true*, that δ was low. Again, recalling Churchill’s memories of Britain’s plans ramping up had the war continued into 1919, the full breadth and depth of the war plans laid bare the actual value of C , to the point where any reasonable value of V Britain could expect wouldn’t exceed it, thus London was willing to seek peace.

Sunk Cost and the (Ir)Rationality of Basing Current Decisions on Past Payouts

Let us return to Faulkner and Stephenson’s response to why the war didn’t end after the Marne. Did sunk cost affect the decision-making of policymakers in late 1914? And how might game theory explain it if it did? The sacrifice of so many lives, as Faulkner and Stephenson put it, placed those men in a dire bind—admitting defeat, or even a white peace would be in effect saying to their populations “all those empty seats at the dinner table were sacrificed for naught.” In a democratic system, this could very easily end a political career. An authoritarian ruler, like Wilhelm II, might have a better chance at political survival, but would have a much longer fall should those chances run against him (see his cousin Czar Nicholas II in 1917-1918 or Muammar Gaddafi in 2011).

On the face of it, as Corina Haita-Falah opens with in her work dealing with the subject, “[In]formative economic theory indicates that costs incurred in the past are irrelevant for future marginal payoffs, i.e., sunk costs must be ignored.”⁴⁸ Since the costs have already been paid and cannot be refunded, they should rationally be ignored in standard game theory. What happened at $t - 1$ has already occurred and mathematically has no place in the current decision beyond what it has already affected. In our example, the losses at the Frontiers and the Marne have already been lost—their roles have been played, and their credits or debits to the war calculation have already been tabulated.

However, as Haita-Falah describes throughout her paper, even in perfect information models where no variables are hidden or guessed at, people still tend to take previous or sunk costs into account.⁴⁹ She concludes that as the value of the sunk costs rise, so too does the behavior of players to value their previous investment more and exhibit a greater tendency to act

upon that evaluation (to the point, she describes, “even in the absence of the psychological mechanisms that typically explain it.”⁵⁰) If this is evident in the low-stakes games played in a university setting, in an unprecedented war of theretofore unimaginable death, it should not be surprising to see Faulkner and Stephenson’s point given credence.

Strictly, sunk costs should be ignored, yet if game theory is going to describe the rational actions of people, it must account for this *ex ante* mistake. Fortunately for game theory, we hinted at a possible solution earlier. The answer lies in reformulating the model and incorporating what it actually represents. Policy makers recognize some variable those previous losses signify to their current decision which is not being modeled (or only implicitly so). To account for what that sunk cost represents, we must determine *why* it mattered to the political landscape of 1914 and what kept the belligerents fighting not only despite those casualties, but because of them.

Firstly, as pointed out by Max H. Bazerman, Toni Giuliano, and Alan Appelman, when the responsibility of those sunk costs fall on few shoulders, i.e., when there are few “high responsibility” decision makers for the potential sunk cost, and that situation is being evaluated by a larger group, the necessity to “double-down” on the original decision heightens.⁵¹ This information can be coupled with Filson and Werner’s framework modeling the updated values of chances given previous information (in Filson and Werner’s case, the number of successful defenses from the attacker’s battles updates the attacker’s belief in the likelihood of the defender not acquiescing to the attacker’s proposal to the change in status quo).⁵²

While modeling the specifics of this dynamic is beyond the capabilities of our model, as it would involve adding complexity beyond the scope of this paper,⁵³ we can still outline the nature of such an addition. Faulkner and Stephenson’s answer strikes directly at the home front response to a late 1914 white peace, that it would be politically untenable. This can be modeled; there is some political cost, which we will call L , of not ending the war victoriously, paid specifically by the decision-makers and political leadership. L is slightly different than our earlier variables—the general C we have been working with is paid, rather abstractly, by the entire state. We might further generalize it (as Wittman does when he describes his model in terms of political leadership paying the costs, but generally unconcerned with the dynamics between leadership and population or different leadership factions within one belligerent⁵⁴) as being a military cost. But L is strictly between the political leadership and the ruled class. As long as L is greater than our original model, victory may be unaffected, but white peace may be untenable. Furthermore, L is especially sensitive to $t - n$ costs in a way our

original model is not, which would allow game theory to model a version of sunk costs that the Triple Entente and Central Powers faced in late 1914.

Conclusion

Game theory is a powerful tool in predicting the future but is also useful in examining the mysteries of the past. As we have seen here, there are rational reasons why World War I continued past the catastrophic losses of the Frontiers and the Marne. They elucidated previous work in game theory and considered both players' cost calculations. Firstly, the reduction of intensity lowered the cost of war, contributing to its length. Secondly, the belief itself in a short war narrowed the shadow of the future, further driving down internalized costs. Finally, the manipulation of the victory conditions solved for costs, especially given the relative mutability of territorial acquisition to finely control for costs.

Future research into more complex war termination modeling by including both current frameworks and tailor-made ones for World War I (or indeed any war) is the next logical step for this line of research. A dynamic game with iterated steps and finding a true Nash equilibrium for war termination, tailored to the period in question, would further game theory within the military history field and provide rationalistic explanations for the decision-making of past conflicts. I do not believe that some "grand unifying theory" of war termination is out there, waiting to be discovered—the breadth and depth of the human experience of war contains too many variables to accurately model beyond any one aspect of a single conflict, but by drawing these general lessons and working towards more modeling of specific phenomena, we can begin to build a repository of frameworks to understand how wars end and how we might expedite that process.

Part of a letter to Maude May, June 18th, 1916

I must not allow myself to dwell on the personal – there is no room for it here. Also it is demoralising. But I do not want to die. Not that I mind for myself. If it be that I am to go, I am ready. But the thought that I may never see you or our darling baby again turns my bowels to water. I cannot think of it with even the semblance of equanimity.

My one consolation is the happiness that has been ours. Also my conscience is clear that I have always tried to make life a joy for you. I know at least that if I go you will not want. That is something. But it is the thought that we may be cut off from each other which is so terrible and that our Babe may grow up without my knowing her and without her knowing me. It is difficult to face. And I know your life without me would be a dull blank. Yet you must never let it become wholly so. For to you will be left the greatest charge in all the world; the upbringing of our baby. God bless that child, she is the hope of life to me.

My darling, au revoir. It may well be that you will only have to read these lines as ones of passing interest. On the other hand, they may well be my last message to you. If they are, know through all your life that I loved you and baby with all my heart and soul, that you two sweet things were just all the world to me. I pray God I may do my duty, for I know, whatever that may entail, you would not have it otherwise.

- Captain Charles May (July 27, 1889 – July 1, 1916), 'B' Company, 22nd Batt., Manchester Regiment⁵⁵



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Author Biographies

Kaya Barringer is a junior pursuing a degree in English & Professional Writing. As a lifelong enthusiast of books, she would like to further her education and obtain her Masters in Library Science to become a librarian. She wrote her paper for EN307: Professional Writing in English Studies. As a lover of social media and the book-focused communities that can be found there, Kaya was thrilled to look into the impacts of these spaces further. She would like to thank Dr. Grover for helping her develop this paper, as well as the rest of the English faculty for helping her strengthen her skills as a writer. She would also like to thank her family for their continued support of her education.

Mafalda Brás is a international student-athlete from Portugal, about to graduate from Park University with a bachelor's degree in Chemistry and a minor in Mathematics. She has played both indoor and beach volleyball at Park for the past four years. After she graduates, she aspires to continue her studies in the field of Analytical and Environmental Chemistry. She wrote this paper for CH342: Advanced Inorganic Chemistry as part of her exploration of sustainable approaches to mitigate environmental impact. She is grateful for Dr. Donna Jean and Dr. Gregory Claycomb for their encouragement, support, and guidance in publishing this paper. She would also like to thank her research professor, Mr. Jim Weigand, for mentoring her throughout her academic journey and fostering her passion for analytical chemistry and environmental applications.

Dorianna H. Braxton is a senior pursuing a B.A in Communication Studies with a minor in Digital Marketing. After she graduates, she is interested in pushing the limits further in the world of sports regarding women. She hopes to be in a male dominated position in the future. She would like to thank her High School teacher, Carrie Marcantonio for always seeing the best in her and the things she could accomplish. She would also like to thank Professor Melody Alexander for going out of her way to make this happen with zero hesitation or doubts.

Dana Gloe is a junior pursuing her BA in English alongside a minor in Organizational Communications. Passionate about reading, writing, and education, she hopes to continue her career in English studies by earning a master's degree after she finishes her undergraduate degree. She completed the discourse analysis piece "Linguistic Choices in Election Speeches: Obama, Romney, and Harris" for the EN231 course Introduction to Language in order to study the linguistics behind political speeches throughout different eras and figures' personal identities. She would like to thank Dr. Amy Mecklenburg-Faenger for her constant support throughout her academic career and guidance during the creation process of this work

Dylan M. Grisham is using his Post-9/11 GI Bill benefits to pursue dual Bachelor of Science degrees in Information and Computer Science with a Networking and Security concentration, and Cybersecurity. Alongside his academic endeavors, he works full-time as a Network Engineering team lead and will use this education to advance further into higher leadership roles. He wrote “Cheaters Gonna Cheat” for the First Year Writing Seminar I course taught by Professor Brie Jontry responding to the question of how Artificial Intelligence will change education. Dylan credits Professor Jontry’s unprecedented ability to critically engage with students’ writing and provide meaningful, targeted feedback as a key factor in his writing success in subsequent courses. He sincerely thanks her for masterfully creating a space for new learners to find their voice and create texts they find meaningful.

Brooklyn N. Lawrence is pursuing a B.A. in Secondary Education with a concentration in English along with a minor in Psychology. She plans on becoming a high school English teacher while continuing to write. She wrote her paper for EN306B: Professional Writing in the Discipline: Business Communication. She would like to thank her high school English teacher Jamie Handling, as well as Dr. Amy Mecklenburg-Faenger and Dr. Stacey Kikendall for encouraging her throughout her educational career.

Logan A. Loudon graduated with a B.S. in Military History, *summa cum laude*, from Park University in October 2024. He has previously earned a B.A. in Political Science from St. Mary’s College of Maryland. He is currently pursuing a Masters of Public Administration at Park University. Logan served in the United States Air Force as a cryptologic linguist for the Balkans and interned under U.S. Representative Michael R. Turner. He would like to thank Professor Sahar Shafqat of St. Mary’s College, Professor Samuel Chambers of Johns Hopkins University and especially Professor Debra Sheffer of Park University for her guidance and support during the work’s writing.

Abby McLaughlin is pursuing a dual major for a B.F.A in Interior Design and a B.A. in Psychology. This paper was created in an effort to understand how interior designers can create designs that actively work for the clients, as well as the environment. After graduation, she will continue her job as a real estate agent and work on freelance projects. In the future, she hopes to pursue a doctorate in psychology, with an area of emphasis in art therapy. She’d like to express gratitude for Dr. Alivia Zubrod’s mentorship and unwavering support. Abby is also grateful to Professor Kelly Gilhaus for her constant advocacy and gentle reminders about capitalization.

Nash Porter is a senior pursuing a B.A. in English, with a minor in Graphic Design. He has had a love for storytelling, and how it shapes the world around us, from an early age. Nash believes that exploring the connections made in our favorite stories, such as Riordan's *The Lightning Thief*, can help us understand their meaning, as well as the world around us that fuels them, and he asserts that doing so helps make us better storytellers. He thanks Dr. Stacey Kikendall and Professor Brandi Handley, as well as innumerable instructors and professors over the years, for their academic guidance and encouragement. He also thanks his family and friends, who have supported him through his scholarly adventures (and misadventures) since 2015. When not writing about fiction, Nash enjoys consuming it - most recently in film, television, and video game form, but also in classic text as well.

Karla Ramos is pursuing a degree in Interior Design and is a member of the Park University Honors Academy. She plans to become a professional interior designer with a focus on creating spaces that reflect individuality while balancing aesthetics and functionality. Her favorite style is Gothic, known for its dramatic elegance and timeless appeal. She wrote her paper for AR499: Senior Studio, taught by Professor Kelly Gilhaus. As a proud Mexican-American woman from the Kansas City area, Karla previously worked in her family's restaurant, where she developed strong communication and leadership skills. She enjoys studying art, exploring new design styles, and finding inspiration in everyday life.

Rylee Reece is pursuing a B.S. in Biology with a minor in Statistics and GIS and Chemistry and is a part of the Park University Honors Academy. After graduating, she plans to attend graduate school in pursuit of a master's degree with interests in analyzing and interpreting biological data. She wrote her paper in First Year Writing II: Academic Research and Writing taught by Professor Epley and would like to thank Professor Epley for encouragement in pursuing her academic interests as an Undecided major that first year. Personally, she is a proud daughter of Brian and Jami as well as a sister from the KCMO area and loves penguins, reading fiction, and taking walks. She hopes the reader finds hope and inspiration from reading her paper.

Cheri Regis is a senior currently pursuing dual degrees in fine art and business administration with an emphasis in digital marketing. She is also an artist, designer, writer and founder of Cheri Regis Works, an art and design studio and online shop that designs, produces and sells contemporary modern art and crafts. Through her studies and research, Cheri has developed a keen interest in how business, ethics, labor and economics intersect with visual art, design and the creative process and how these disciplines together converge with one another and society at large. She wrote this paper for the course Business Law I, taught by Brent Gilje, J.D. She would like to extend her sincere gratitude to Professor Gilje and her classmates for teaching her the principles and fundamentals of business law and ethics and for showing her that even credible businesses are still subject to accountability and ethical standards. With her fine art practice, Cheri strives to achieve and champion ethical credibility and high standards.

Daniel J. Snapp is pursuing a B.S. in computer science. As a non-traditional student, he brings over 15 years of experience in the IT industry, where he has served in various roles, including business analyst, developer, scrum master, product owner, and product manager. Throughout his career, Daniel has earned multiple certifications in the Scaled Agile Framework as well as cloud certifications from Azure and AWS. He wrote the paper *"Implementing a New Identity Governance and Administration System"* for his IS315: Computer Systems Analysis and Design class. Daniel has successfully combined his extensive practical experience with academic knowledge to lead a highly successful product initiative within his organization.

Haley Wathen is pursuing a B.A. in English and Professional Writing along with a minor in Criminal Justice. She hopes to continue with writing and is pursuing a future career in copyediting. As an avid fan of the Netflix adaptation of *The Haunting of Hill House*, she was ecstatic to have the opportunity to discuss the rhetoric of the show within her academic career. She would like to thank Dr. Amy Mecklenburg-Faenger for not only helping her with this essay, but for encouraging her submission. Without her guidance in rhetoric and grammar, she would not have had the confidence to move forward. She would also like to thank her husband, Heath, who has re-watched the show countless times with little objection. Lastly, she would like to dedicate this essay to her daughter, Zoe, who she hopes will always "insist on her cup of stars".

The Navigator

The Navigator is a scholarly journal intended to highlight the best and brightest work from Park University undergraduate students. Work is accepted across the disciplines from any undergraduate course. Students are encouraged to submit research projects, essays, and other scholarly work. Faculty may also nominate student work. An email will be sent to the student notifying them of the nomination and requesting their consent.

Submission Requirements:

- We accept submissions from currently enrolled Park University undergraduate students.
- Submissions must have been completed during the student's undergraduate career at Park University.
- Submissions must be publishable in both print and online formats.
- Images, tables, and graphs are accepted and encouraged as long as they can be reproduced in print and online.
- Submissions should be in compliance with Park's academic honor code.
- While creative spins on academic writing are accepted, pure creative writing (poems, short stories, etc.) is more suitable for Park's literary journal the *Scribe*.

How to Submit:

- You may submit your work as a Word document on the website thenav.org.
- Be prepared to include the following:
 - Your full name
 - Park Student ID number
 - Title of your piece
 - The semester/term, course, and instructor the piece was written for
 - Short description of the assignment the piece was written for

Submission Deadline:

All submissions must be received by December 31, 2025 to be considered for *The Navigator's* sixth volume. However, we do accept submissions on a rolling basis. All submissions received after December 31, 2025, will be considered for the following volume.

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