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The Endurance of the Frankenstein Myth:A History of Ideas

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The Endurance of the Frankenstein Myth: A History of Ideas

by

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Abstract

The term "Frankenstein foods" is an interesting and unique phenomenon. The term represents ideas and themes transported over two hundred years from the novel *Frankenstein* (Shelley, 1818) to contemporary critical discourse about biotechnology. Most studies of *Frankenstein's* endurance have focused on the novel's intrinsic literary form, that is, its reception history, adaptations, interpretations, its publication, or its canonical status as a classic. However, this thesis is a history of ideas that offers a unique examination of *Frankenstein's* endurance in mythical form as the Frankenstein myth. A thematic network reveals a chain of ideologies that connects the original Frankenstein myth to contemporary discourse about biotechnology.

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Dedication

I dedicate this work to my grandmother and guardian angel Phyllis; continue to watch over me from Heaven.

To my mother Elsa, thank you for your love, wisdom, and support.

To my beloved children Rhyce and Rhyan, and my brother Mikhail, thank you for your inspiration; continue to dream big.

To my well-wisher Jacki, thank you. Your encouragement made all this possible.

To Cammy, thank you for your love and kindness.

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List of Symbols, Terms, and Abbreviations

Symbol	Definition
→	Factors that sustain connections between mythical themes
↔	Factors that connect "concepts" to myth

Term	Definition
Concepts	Concepts are ideas, words, and phrases taken from various authors' interpretations of *Frankenstein* and its themes.
Endurance	When discussing the "endurance" of the Frankenstein myth, its endurance involves the myth's ability a) to be transported from its original genre; b) to be subsumed into culture; and c) to be transported across time.
Form	The form of a myth is its conceptual "storeroom" where a sign's superficial or distorted representation of an original story, event, history, and meaning are kept.
Meaning	Meaning contains the full unique knowledge of the history of ideas, facts, and details. In meaning, events and ideas retain their unity and fullness in spatiality and principles.
Myth	A myth is a tale that possesses an active force that creates its own system of meaning beneath linguistic systems.

Mythical themes	Mythical themes are divided into Global, Organizing, and Basic themes that are interconnected and formed from clusters of concepts within a mythological system.
Mythological System	A mythological system is a web of ideological connections and interrelated meanings among mythical themes.
Paradox	The paradox is the mythical theme life within death: The paradox is a distortion of the idea that there are boundaries (physical or spiritual) that exist between life and death.
Themes	Themes are the underlying meaning of the concepts. They influence concepts in the formation and endurance of the mythical themes and anchor the concepts within social reality.

Abbreviation	**Definition**
GM	Genetic Modification
GMFs	Genetically Modified Foods
GMOs	Genetically Modified Organisms

Chapter One: Introduction

We live in a post-modern culture that seems obsessed with breaking with convention, seeking the avant-garde, new trends, novelty. It is dominated by self-centered ideologies and emerging technologies. Nevertheless, contemporary critical discourse occasionally employs allusions to classic literature, and allusions to Mary Shelley's 1818 novel *Frankenstein* have become frequent. For example, the term "Frankenstein foods" is frequently used in discourse to represent the dangers of biotechnology. According to Cook (2004), the term "Frankenstein foods" was first used in the *Daily Mirror*, a publication in the United Kingdom (UK), on January 28, 1999 (p. 96). In the United States (US) journal *Society for the Study of Social Problems*, the term has also been used to communicate the public's anxiety about Genetically Modified Foods (GMFs). Researcher Rachel Schurman (2004) has noted public anxiety about GMFs in her article "Fighting 'Frankenfoods': Industry Opportunity Structures and the Efficacy of the Anti-Biotech Movement in Western Europe." She writes, "as headlines containing the words, 'Frankenstein foods,' 'genetic contamination,' and 'Terminator technology' graced newspapers and magazines across the continent, the public learned that GMOs were entering the food supply and not everybody was happy about it" (p. 258). Schurman represents one of a vast number of scholars who are also interested in the use of the term "Frankenstein foods" to represent biotechnological uncertainty in contemporary discourse. Her article contains one of the myriad of symbolic references to *Frankenstein* in critical discourse on topics like politics, economics, and religion, in popular magazines, news, and media.

1.1 Why *Frankenstein*?

Frankenstein is not the only novel that has given birth to frequent allusions, but it is one of the richest allusions in current use. Other nineteenth-century novels' themes have also endured

long enough to reappear in contemporary discourse. For example, on February 12, 2015, *USA Today* published an article titled "Bill Cosby: 'Dr. Jekyll and Mr. Hyde,' says new accuser." In the article, Maria Puente reported "Two new accusers came forward Thursday to assail Bill Cosby for sexual assaulting them, including one who labeled him a 'Dr. Jekyll and Mr. Hyde' personality" (para. 1). The reference borrows from characters within the classic novel *The Strange Case of Dr. Jekyll and Mr. Hyde* (1886) by Robert Louis Stevenson and was only used to make a point about Bill Cosby's character. However, in contrast with the novel *The Strange Case of Dr. Jekyll and Mr. Hyde*, the novel *Frankenstein* has been associated with biotechnological uncertainty, and allusions to it possess deep and varied layers of multiple themes. The Frankenstein myth warrants further investigation into the philosophical and communication complexities of its endurance and contemporary use.

1.2 Research questions

This research project is an exploration of the origins of the term "Frankenstein foods" and the extent to which the myth of *Frankenstein* possesses enduring social appeal or intrinsic enduring properties or qualities that have helped to determine society's preoccupation with the past. An inquiry into communication theories might reveal how the Frankenstein myth's social appeal and intrinsic qualities have contributed to its enduring relevance in critical discourse.

The thesis' main research question is, "How does *Frankenstein* endure as myth and become appropriated in critical discourse as the uncertainty about technology, leading to its appearance as 'Frankenstein foods?'" The thesis is not an inquiry into the endurance of the novel itself, for example, the frequency of its republication, nor is it an inquiry into the novel's widespread readership or its canonical status as a classic. Instead, the endurance of the novel's core ideas as a myth is the thesis' focus. In addition, the myth's ability to transcend its original

genre and to be transported across time warrants investigation. These components comprise the definition of "endurance" in this thesis. They also become the key criteria, or two pillars, for selecting data, theories, and methods of analysis. These criteria inform the basis for the paper's sub-research-questions: a) How does the Frankenstein myth transcend fiction? and b) How does the myth come to be adapted to technological changes over time, and to what degree does it retain its meaning?

This study's discussion is based upon the assumption that the Frankenstein myth functions as a self-sustaining communication system of meaning. This system reproduces and forms human understanding of reality. In addition, the study discusses this system of meaning as though it transmits across time in an unbroken ideological chain that begins from the conception of the novel *Frankenstein* to modern discourse about biotechnology. The thesis explores this system of meaning and selects artifacts to construct a history of ideas.

In order to answer the research questions, it was important to select artifacts that represent significant engagement with the ideas and themes that originated with the novel in 1818. These artifacts were beneficial in constructing a history of ideas that led to the use of *Frankenstein* in modern discourse about biotechnology. The artifacts represent a) articles about emerging technologies; b) articles specifically about *bio*technologies in Western online newspapers; and c) articles that allude to *Frankenstein* in particular and use the novel to emphasize the uncertainty about Genetically Modified Foods (GMFs).

1.3 Theories

In order to explain *Frankenstein's* contemporary relevance and endurance, this thesis used theories of communication and philosophy. Saussure (1916/1972) and Barthes (1972) from the field of semiotics and theories of myth by Ferrell (2000) from the field of philosophy helped

explain how the Frankenstein myth has been transported across several epochs to find relevance within contemporary critical discourse.

First, applying Saussure's ideas in linguistic-semiotics helps to reveal how the myth has adapted to cultural and technological changes over time, and the degree to which it has retained its meaning. Saussure's linguistic-semiotic perspective explains how the Frankenstein myth might have been adapted to cultural and technological changes over time due to language's abstract nature. In addition, applying Saussure's linguistic-semiotic perspective explains how the use of the term "Frankenstein foods" might have come to be adapted to technological changes due to an ideological connection to the Frankenstein myth.

Secondly, applying Barthes' mythological-semiotic perspective explains how myth communicates the meaning of messages through ideological connections from the past to contemporary discourse. Barthes' mythological-semiotic perspective offers an understanding of how *Frankenstein's* mythological signification became associated with biotechnological uncertainty within critical discourse.

Thirdly, Ferrell has noted the nature and function of myths that bridge abstractions with social reality. For this reason, Ferrell's theory is beneficial in examining the properties in myth that bridge the Frankenstein myth with uncertainty about GMFs.

1.4 Methods

Since the research historically traces how the Frankenstein myth has endured to mean technological uncertainty, the research uses the history of ideas as the main methodology.

In order to explore the meaning of the Frankenstein myth from a historical perspective and connect transported ideologies across eras, the thesis employs a customized history-of-ideas methodology. It involves constructing a thematic network that reveals and traces the

Frankenstein myth from its origins to contemporary critical discourse. The thematic network aims to identify and trace thematic "patterns" that might provide an explanation for the Frankenstein myth's eventual association with *bio*technological uncertainty.

1.5 Contemporary Data

In order to perform an in-depth analysis within the length of this thesis, the history of ideas is anchored to three selected artifacts from Western online newspaper articles that best exemplify contemporary critical discourse about biotechnology. They represent themes found in many articles that reference *Frankenstein* in debates about the uncertainty of "Frankenstein foods" or GMFs. These artifacts offer valuable insight into how the Frankenstein myth and its themes have transported across genres and eras to become relevant in contemporary critical discourse.

The first selected artifact is Ian Ashbridge's article in *Crops* (2010). Ashbridge has examined famine as the dire consequence of climate and environmental changes. The article offers an alternative perspective on climate and environmental changes by associating Frankenstein foods with biotechnological uncertainty.

The second article is by James Gillespie, published in *The Sunday Times* (2013). Like Ashbridge, Gillespie argues that Frankenstein foods and GMFs are beneficial to the environment. In arguing that GMFs are beneficial to the environment, Gillespie attempts to alleviate the public's uncertainty towards Genetically Modified (GM) technology.

The third article is by Phillip Bowern, published in the *Western Morning News* (2015). Unlike the other two authors (Asbridge, 2010 and Gillespie, 2013), Bowern offers a psychoanalytic view of the dangers of biotechnology and its consequences for health. His broader psychoanalytic application of the term "Frankenstein foods" focuses not only upon

products, such as GMFs, but also upon their processes of creation. Bowern argues that Frankenstein foods are dangerous to both the environment and human health. Although there are other allusions to Frankenstein in contemporary discourse, the focus of this thesis is on the use of the term "Frankenstein foods" in articles such as these. Anchored in these contemporary articles, the thesis constructs a retrospective history of ideas to gain an understanding of the contemporary use of the term.

1.6 Thesis chapters

- **Chapter 1—Literature review:** This chapter examines scholarly works that, like this thesis, a) examine the use of symbols/metaphors in contemporary scientific journals, b) examine allusions to classic literature that relates to *Frankenstein*, and c) examine allusions to *Frankenstein* in contemporary critical discourse.
- **Chapter 2—Theory and Theory application:** This chapter provides an explanation of theories of semiotics and philosophy by Saussure, Barthes, and Ferrell used in this inquiry.
- **Chapter 3—Research Methodology:** This chapter explains the selection of texts studied; the "history of ideas" and Thematic Network methodology; and the methods employed in the thematic analysis of texts.
- **Chapter 4—Analysis:** The analysis is structured chronologically. It employs the thesis's theories and examines the history and trajectory of the core themes of the myth—from Mary Shelley's literary model, the Prometheus myth, to contemporary online newspapers and magazines' use of the term "Frankenstein foods" in current debates about biotechnology.

1.7 Significance and relevance

The significance of the research is that it underscores how myths articulate the tension between emerging technologies and society. A communication-focused history of ideas may explain how a classic novel such as *Frankenstein* has endured and has come to mean biotechnological uncertainty in contemporary critical discourse. Ideas from the Frankenstein myth are a common touchstone in debates about biotechnology and reflect the uncertainty about the supposedly unnatural processes of food production. Although the selected contemporary artifacts represent only snapshots of the uncertainty about (bio)technology that are articulated through the use of the Frankenstein myth, the thesis' inquiry goes beyond a narrow examination of contemporary debates in order to examine the transmission of the Frankenstein myth and related ideologies over time within critical discourse. An examination of the transmission of ideologies creates further understanding of the transport of myths' influential power across genre and eras.

Thus, the results of the research may assist future researchers to build upon existing knowledge about the influence of classic myths within contemporary society. In addition, the methodologies used in this research may contribute to the construction of a tentative yet comprehensive communication framework that tracks myths varied meanings across genres and eras.

Chapter Two: Literature Review

This chapter provides a historical and thematic review of other scholarly works that, like this thesis, have examined various aspects of *Frankenstein's* endurance.

The review has three sections. The first section discusses Schoene-Harwood (2000), whose literary examination of the novel's themes leads to a review of works by Morton (2002) and Levine and Knoepflmacher (1979). These works were important to this review, for they have examined the novel's literary artistry, a factor that contributed to the Frankenstein myth's endurance and contemporary relevance. The review first discusses Schoene-Harwood (2000), for he has offered substantial analysis on the cultural contexts in which *Frankenstein* emerged. Like Morton (2002), Schoene-Harwood (2000) compiles and examines *Frankenstein's* various early receptions, literary interpretations, and developments in criticisms from the early nineteenth century to the late twentieth century. Schoene-Harwood's examination is important to this study, for he explores the novel's various mythological and ideological features taken from early journals, newspapers, and scholars. These features can be traced over time in order to account for the novel's endurance and relevance in modern critical discourse. Still, Schoene-Harwood's article differs from Morton's in that Schoene-Harwood has provided substantial analysis that has anchored the novel's birth within the social conditions of Mary Shelley's life.

The second section of the review discusses works by Holmgreen (2008); Van Gorp and van der Goot (2012); Gschmeidler and Seiringer (2012); and Augoustinos, Crabb, and Shepherd (2010). This section gives special attention to works that have discussed how the media has influenced and shaped public opinion about GMFs by the use of the term "Frankenstein foods."

Finally, the third section of the review discusses Botting (2003); Swart (2014); Bingham (2002); and Kitzinger (2009), whose works are representative of studies on the use of

Frankenstein in discourse that question the existence of boundaries between fact and fiction. This section discusses scholars' works that have examined the influence of fiction in shaping public opinion on biotechnologies.

Although most of the scholars in this review have aims and methods that differ from this thesis, their discussions have helped to validate the importance of this present inquiry. They have also helped to guide the paper's methodology and theory toward a history of ideas that traces how "Frankenstein foods" came to be used in contemporary discourse. Overall, these three sections of the review consistently reflect the extent to which the public associates the Frankenstein myth with technological uncertainty. These sections highlight the use of various powers of influence, such as the media, fiction, and literary devices to shape public opinion.

2.1 Literary histories of *Frankenstein's* reception and adaptation as a novel

Scholars have written insightful literary histories and literary criticisms of *Frankenstein* (Levine & Knoepflmacher, 1979; Schoene-Harwood, 2000); as well as cultural histories (Bloom, 1987). Schoene-Harwood's (2000) work is actually an anthology containing excerpts from many other authors' works across several eras. His editorial commentary on this material is relevant, for it supports this research project's historical analysis and enables an examination of the novel's transit across genres and eras.

In his book, Schoene-Harwood has compiled and has introduced essays, articles, and reviews of the novel *Frankenstein* from the novel's era of origin to the late twentieth century. He has examined these essays, articles, and reviews and has then explored the novel's artistry and its various interpretations. For example, in chapter one "Its's Alive!: The Reception and Endurance of *Frankenstein*," Schoene-Harwood explores Richard Brinsley Peake's (1823) theatrical interpretation *Presumption: or, The Fate of Frankenstein* that might have contributed to the

novel's endurance. Schoene-Harwood notes that "Richard Brinsley Peake reworked Shelley's controversial material for the stage, rekindling public interest in the novel to such an extent that Shelley's publishers decided to bring out a second edition." (p. 21). At the core of Shelley's "controversial material" lies the creation of the monster that sparked public debates. According to Schoene-Harwood, Peake debated the ethics of the monster's creation in his theatrical interpretation of the novel and drove the "public interest." This chapter is useful to the current study because it reveals how various factors intrinsic to the novel, such as its "controversial" themes, propelled the "public interest" in early interpretations of *Frankenstein.* In addition, Schoene-Harwood's analysis allows particular consideration of how these early themes enable the novel's lift beyond fiction into critical discourse.

Schoene-Harwood's book provides more extensive and comprehensive analysis of data than this study. For example, in Chapter four "Whose Body Does the Text Display?: Representations of Gender in Frankenstein," Schoene-Harwood examines feminist approaches to the novel. In Chapter six "I'll Be Back!: Reproducing Frankenstein," he examines various film adaptations. Although the examination of these approaches is useful in highlighting elements that might have contributed to the endurance of the Frankenstein Myth, this study explores thematic associations and ideologies that underlie the myth's many interpretations and adaptations. His work provided this present study with useful thematic associations, such as the association of Frankenstein's monstrosity a) with social discord; b) with a fusion of the natural with the unnatural (nature and technology), and c) with a disruption of the natural order.

Schoene-Harwood discusses interpretations of the novel that associate the horrors of the Frankenstein monstrosity with society's acts of rebellion that were "an upsetting reminder of the horrors of the French Revolution as well as the possibility of those horrors returning" (p. 16).

Like this thesis, Schoene-Harwood's work is an examination of debates about the creation of the monster and their association of the monster with "horrors" and social discord. For example, in Chapter five, "Pregnant with an idea: Discourses of Monstrosity in *Frankenstein,*" Schoene-Harwood discusses Lee Sterrenburg, who asserts in his essay "Mary Shelley's Monster: Politics and psyche in *Frankenstein*" that Shelley "was never a fervent supporter of the French Revolution and [was] clearly horrified by the Reign of Terror that succeeded it" (p. 133). The Frankenstein monstrosity and its association with real horrors, such as the "Reign of Terror," are one of the novel's original themes that found relevance in real historical context. Schoene-Harwood's discussion of Sterrenburg's essay is useful to this study, for it shows how *Frankenstein's* intrinsic theme of monstrosity transports from its fictitious origins to find relevance in commentary about the French Revolution. However, Schoene-Harwood's focus on *Frankenstein's* early interpretations does not trace the trajectory of early (original) themes into contemporary (modern) interpretations or contemporary discourse. Still, his discussion of the novel's original theme of monstrosity not only accounts for the historical and contemporary thematic thread that connects past and present interpretations of *Frankenstein*, but also encourages one to connect more specific contemporary critical discourse about biotechnology back to the origins of the Frankenstein myth.

2.2 Literature about "Frankenstein foods"

This section of the review explores scholarly literature that has discussed the use of the term "Frankenstein foods" to represent biotechnological uncertainty in contemporary critical discourse. Several online scientific and social journals, articles, and books have analysed the term's use and its influence on the public's perception of biotechnology and genetically modified foods (GMFs).

Articles were selected from online scientific and communication journals that discussed the identification, redefinition, and cultural appropriation of *Frankenstein*. This review distinguishes the ways in which scholars have used the term "Frankenstein foods" to represent biotechnological uncertainty.

2.2.1 Literature analyzing "Frankenstein foods" as biotechnological uncertainty

A large number of studies have examined how rhetorical and psychological constructs have shaped public perception of biotechnology and GMFs.[1] However, this second section focuses on Holmgreen (2008); Van Gorp and van der Goot (2012); Gschmeidler and Seiringer (2012); Augoustinos, Crabb, and Shepherd (2010); whose studies have deliberated in depth about how allusions to *Frankenstein* have influenced the public's attitudes towards biotechnology.

Holmgreen's (2008) article is relevant to open the review, since she has noted that "metaphor" is a conceptual tool in discourse about biotechnology. Holmgreen has applied the frame of *conceptual metaphor theory* to focus on the function performed by metaphor in shaping the public's negative attitudes toward biotechnology. Her analysis was based on eighty-six articles retrieved from a Danish website representing newspapers and tabloids. Holmgreen has argued that the public perceives biotechnology as eroding accepted boundaries between the unnatural and the natural: "The perception of biotechnology as being unnatural or even transgressing accepted borders of manipulation is significant in determining public views" (p. 101). Holmgreen highlights that the media's use of the term "unnatural" in discourse not only describes biotechnology but also represents biotechnological *processes*. It leads one to consider

[1] See Augoustinos, Crabb, & Shepherd (2010); Beacco, Claudel, Doury, Petit & Reboul-Toure (2002); Berthon, Pehlivan, & Desautels (2008); Frewer, Howard, & Shepherd (1997); Gschmeidler and Seiringer (2012); Holmgreen, 2008; Maeseele (2015); Shaw (2002); Van Gorp & van der Goot (2012).

the term “unnatural” as a rhetorical construction that encourages opinionated or biased communication.

Holmgreen has concluded that newspapers use opinions from public and political activists in order to develop explanations about GM technology. Holmgreen has stated that the “mix of newspaper ideology, quoted political and activist sources and public opinion, confirm[s] that several actors in the public sphere exert influence on what the press writes and how it does it” (p. 117). Holmgreen’s passage leads one to doubt that the “mix of newspaper ideology” attends to the media’s main purpose of providing the public with comprehensive understanding of the complexities about GM technology. By asserting that the public’s understanding about the technology also relies on “political and activist sources,” she emphasizes that the public’s understanding of GM technology is mainly derived from biased perspectives.

Still, Holmgreen does not account for how biased communication or “opinion” on the subject of biotechnology leads to the loss of objectivity in the public’s perception about biotechnology. Her study posits insufficient explanation about the media’s persuasive and influential role in communicating “ideology” to the public through adverse language about biotechnology. In addition, Holmgreen does not provide a historical and thematic examination of the media’s transmission of “ideology” to the public.

Nonetheless, Holmgreen’s limited data set (March 2005 – Jan 2006) inspired the development of historical and thematic methods to examine this topic further.

The media uses metaphoric conceptual tools that have the power to shape communication and perception in order to explain complex scientific ideas, such as biotechnology, to the public. Van Gorp and van der Goot’s (2012) article has contributed to the discussion of the use of metaphoric conceptual tools, such as the Frankenstein metaphor, and their discussion advanced

beyond Holmgreen's (2008) discussion to highlight media's persuasive and influential role in communicating ideas about biotechnology. Van Gorp and van der Goot applied framing analysis to identify *Frankenstein's* association with dystopian themes and a "Faustian" narrative (Holmgreen, 2008, p. 106). The researchers maintain that the media associates the novel *Frankenstein* with dystopian themes that connect to negative and abstract metaphoric constructions, such as the use of the term "Frankenstein foods."

In order to identify the negative and abstract metaphoric constructions, Van Gorp and van der Goot (2012) examined 272 communications from advertisements, articles, periodicals, websites, and brochures between 2005 and 2009 within Belgium (Dutch and French areas). Van Gorp and van der Goot have constructed a "frame matrix" in order to show how stakeholders (food industries, farmers' associations) used frames in discourse to persuade the public's attitude towards biotechnology (p. 132). Van Gorp and van der Goot's "frame matrix" used inductive framing analysis, a methodology that involved "the identification of patterns" (p. 132). The researchers identified whether "patterns" existed within conceptual frames and determined their cultural effect.

Van Gorp and van der Goot (2012) identified six frames in their analysis, one of which was "The Frankenstein frame" (p. 139). The researchers argued that the "Frankenstein frame" has many variants relating to *Frankenstein*'s association with biotechnological uncertainty. Van Gorp's and van der Goot's identification of the "Frankenstein frame" mostly a) reflects consequences and obsessions with creating artificial life; and b) reflects the theme of the creator's creation turned against its creator. Van Gorp and van der Goot have noted that "The Frankenstein frame" underlies "humans acting as God or the arrogance of science in pursuing unnatural ways of producing food" (p. 139). The consequence of "humans acting as God"

directly associates with "the arrogance of science" and evinces overarching public concerns about biotechnology and the manipulation of natural processes of producing foods.

Van Gorp and van der Goot's (2012) "Frankenstein frame" associated GM technology with the theme of man playing God. According to the researchers, the frame's power to influence the public might be its connection with dire consequences or cataclysmic events such as "Judgement Day" and the "Apocalypse" (p. 139). Van Gorp and van der Goot's argument leads one to consider whether "The Frankenstein frame," in the context of the production of food, generates powerful messages of a cataclysmic event ("Apocalypse") due to its association with the theme of man playing God.

Van Gorp and van der Goot have also examined how the media communicated information to the public on the natural processes of producing food versus GM processes in agriculture. The researchers have given insights into how GM stakeholders construct persuasive communication to sway the public's attitudes to favour GM processes for their own self-interests. Van Gorp and van der Goot's identification of the "Frankenstein frame" provides insightful knowledge about how varied framing devices (language phrasing, choice of vocabulary in arguments, catchphrases, and other philological variations) might succeed in influencing and shifting the public's attitudes about GMFs.

However, Van Gorp and van der Goot's study did not examine thematic patterns or place emphasis on the historical evolution of various negative and abstract meanings embedded within the use of the "Frankenstein frame." Still, their methodology is useful as an example for this current study's methodological approach, for it tracks the origins of negative themes: it associated *Frankenstein* with the consequences of "humans acting as God," and it raised the theme of creation turned against its creator.

Van Gorp and van der Goot's study raises the following question: To what extent does the use of "frames" influence the public's attitudes towards biotechnology? In order to find an answer to this question, Gschmeidler and Seiringer's (2012) study becomes relevant to this review, for they have used *framing analysis* to examine the extent to which representations of Synthetic Biology (SB) in the media influence the public. The researchers conducted a content analysis of various representations of SB. They studied how SB was covered in the German-speaking media between 2004–2009 and examined 233 articles published in Austrian, German, and Swiss magazines and journals (both online and print). Gschmeidler and Seiringer have argued that *Frankenstein's* association with biotechnological uncertainty has been sustained due to public "fascination and repulsion" with biotechnology, ethical concerns, and attitudes about emerging technologies (p. 170). Gschmeidler and Seiringer's examination of the public's "fascination" as well as "repulsion" concerning biotechnology leads one to consider the extent to which the media communicates valid scientific information about biotechnology.

However, Gschmeidler and Seiringer's discussion does not substantially confirm whether the public believes the media communicates valid scientific information. Instead, the researchers have concluded that insufficient evidence found in the media restrains any concrete conclusions about public opposition to SB: "There are no hints at public opposition in the media, and SB seems to 'hibernate' behind biotechnology" (p. 170). Still, even though SB appears to "hibernate behind biotechnology," meaning that SB is not a prioritized issue in the German-language media, the researchers' conclusion that there is no "public opposition in the media" towards SB might not be a true representation of the public's attitudes toward biotechnology.

Nevertheless, Gschmeidler and Seiringer's (2012) study provides further insights into how language use in media influences the public's attitudes and concerns about biotechnology.

However, they did not engage in an expanded historical and thematic examination of the media's use of negative language given their time-limited data set (January 1, 2004 to December 31, 2009). Regardless, their results provide valuable insight into how newspapers and articles use negative language to influence public attitudes about biotechnology or GMFs.

Augoustinos, Crabb, and Shepherd's (2010) study of the use of negative language about GMFs furthers the discussion about the effect of negative language on the public's attitudes about biotechnology. Augoustinos et al's study is appropriate for this review, for they have discussed the public's uncertainty about biotechnology and other negative connotations that have associated *Frankenstein* to social divisiveness.

Augoustinos et al. (2010) have studied artifacts regarding the health risks of GM production and consumption, and the social and environmental concerns about GM technology. The researchers examined six newspapers in the United Kingdom (UK) from Jan—March in 2004 and found the "highly graphic description of GM crops and foods as 'Frankenstein crops/foods' was used on 33 occasions in 22 articles" (p. 102). The researchers then applied the method of critical discourse analysis in order to examine how the stakeholders (the British public and biotech companies) used "graphic description[s]," which likened GM foods to "poison" in the debates about biotechnology (p. 102). According to the researchers, the use of "graphic description[s]" of GM foods in debates, such as the use of the word "poison," highlights the dialectic in society about GMFs. Augoustinos et al have categorised the use of these "graphic description[s]" to be abstract "negative construction[s]" (p. 102). The researchers contend that negative-constructed language has been used to discuss social and environmental ethics, health risks, and the unnatural methods of food production and farming, as discussed in Van Gorp and van der Goot (2012).

Augoustinos et al. (2010) also raised the possibility that social and political divisiveness about GMFs could be the result of ethical and politically inspired discourse. Thus, they provide valuable insight on various forms of scientific communication that spread public fear and distrust about GMFs. Their discussion of "negative construction[s]" provides further understanding of how the Frankenstein myth is associated with biotechnological uncertainty by way of specific communication strategies. For example, their attention to the use of communication strategies is relevant in understanding how public trust about GMFs might be contingent upon the media's use of words such as "unnatural," which exerts persuasive and explanatory power, as discussed in Holmgreen (2008) and Van Gorp and van der Goot (2012).

Augoustinos et al.'s discussion inspired this thesis' examination of specific types of language use, which involves a consideration that social divisiveness about GMFs could be the result of negative-constructed language. In addition, the researchers' discussion spurred the creation of a thematic network that can trace the pattern of specific types of language use in critical discourse about biotechnology.

2.2.2 Literature analyzing "Frankenstein foods" as fact vs fiction

This section of the review covers a subgroup of studies that have examined the media's rhetorical and psychological constructs in the use of the term "Frankenstein foods." The focus here is on studies identifying the media's manipulation of the public's preconceptions of boundaries between scientific facts and fiction in discussions about GMFs (Bingham, 2002; Botting, 2003; Kitzinger, 2009; Swart, 2014). These studies have discussed in depth how allusions to *Frankenstein* in scientific discourse about biotechnology have distorted the public's preconceptions of the existence of boundaries between fact and fiction.

Botting (2003) has offered a philosophical examination of myths and metaphors that blur the boundaries between fact and fiction. Botting has discussed the pliability and transcendence of the metaphor in modern, post-modern, and hypermodern discourse. For example, according to Botting (2003), in a hypermodern discourse on science, the metaphor is no longer a mere form of language, but rather "inscribes itself inextricably within science" (p. 354). Since the metaphor "inscribes itself within science," it inverts knowledge and representation of scientific facts. Botting (2003) has noted how the Frankenstein monster's formless representation within scientific discourse blurs these preconceptions of boundaries between fiction and fact:

> The ambivalence of the monster is always, given its retrospective function, something of a metaphor providing form for what is formless. It inhabits texts as much as nature. A strange biotextual entity, it marks a crossing where the real and the world of symbols confound each other. (p. 345)

Botting's passage speculates on how the crossing of these boundaries dismantles the public's preconceived ideas of the boundaries that exist between art and science, between what is "form" and what is "formless," and between "the real" and "the world of symbols." Botting leads one to consider whether the crossing of boundaries between the "real" and the "world of symbols" might lead to a confluence of both, and as such, the monster metaphor becomes an influential power within narratives.

Botting engages in a philosophical discussion that is similar to the core foundation of the thesis' study since he focuses on the manner in which society gives "form" to Frankenstein's monster, and in doing so, connects fiction to reality. Botting (2003) has noted the emotive power of the monster metaphor in discourse: "Monsters give form to fears, desires and anxieties, allowing the channelling and expulsion of emotional energies" (p. 341). The use of

Frankenstein's monster in discourse connects abstract ideas to real emotions such as "fears, desires and anxieties." His comment that "monsters give form to fears, desires, and anxieties" connects abstractions to social reality and inspires the foundation for the thesis' discussion of the Frankenstein monster's/myth's (abstraction) association with biotechnological uncertainty (social reality). In addition, Botting's examination of the making of the myth and the monster provides this research with the philosophical foundation not only to discuss the Frankenstein myth's ideological connection to social reality but also to discuss how the myth endured over time.

However, Botting does not comment on the historical evolution of the "formless" or ideological thread between fact and fiction, which is the aim of this thesis. Still, Botting's philosophical examination is beneficial in that it provides ideas on the philosophical thread that connects the Frankenstein myth and monster to social reality. His ideas about "the world of symbols" are supportive of this thesis' exploration of theories of myth that postulate a philosophical thread connecting abstractions to social reality.

Swart (2014) furthers this inquiry into the Frankenstein myth's ideological connection to social reality and its relevance in critical discourse. Swart refers to an article "The Machine and the Robot" by Isaac Asimov (1978) and builds her own analysis on Asimov's term, the "Frankenstein complex" (Asimov, 1978). Her analysis of the term "Frankenstein complex" reveals that it refers to the fear of man's artificial creation turning against humanity. In her article, Swart focuses on the portrayal of three "de-extinction" projects in scientific discourse—the mammoth, quagga, and thylacine (Swart, 2014). Like Botting (2003), Swart (2014) focuses her analysis on the public's preconceptions and representations of myth in scientific discourse. She maintains that representations of the Frankenstein myth function as a useful metaphor for

expressing fears about emerging technologies and the loss of the public's confidence in scientific endeavors.

Even so, Swart has asserted that the public maintains fascination with scientific endeavors through fiction, as evidenced through movies and science fiction stories. She has speculated that myth's power of influence function "to not only interpret but even shape popular understandings of contemporary society—especially science" (p. 48). Swart promotes the idea that myth's power to "shape popular understandings of science" highlights the powerful impact of fiction upon culture. Swart has noted that the metaphorical uses of *Frankenstein* in reference to biotechnological uncertainty fashioned scientists' discourse on de-extinction: "Scientists themselves have used this mythic metaphor—not only to explain their work—but to shape it, obscuring a more nuanced understanding of a project" (p. 63). Swart's mention of the "mythic metaphor" emphasizes both the obscurity and spectacle in the transmission of scientific knowledge to the public. Swart's ideas about the use of the "mythic metaphor" leads one to consider how such obscurity and spectacle in the transmission of scientific knowledge allow the Frankenstein myth to shape the public's understanding of scientific knowledge and to erode the public's preconceived ideas of the boundaries that exist between fact and fiction.

Overall, Swart's discussion draws attention to how journalists and scientists induce public fascination with the "mythic metaphor." In addition, Swart's discussion of the "mythic metaphor" provides insight into the nature of the Frankenstein myth and steers the paper's inquiry into how the myth transcends fiction to generate and maintain public intrigue through scientific spectacle.

Like Botting (2003) and Swart (2014), Bingham (2002) has also discussed how *Frankenstein* transcends fiction to be relevant within discourse about biotechnology. Yet

Bingham's study is different from these other studies, in that he has speculated on how the blurring of fact and fiction within discourse punctuates real life consequences, such as the GM foods' controversy. Bingham (2002) has noted how scientific discourse encapsulates the "materiality of science fiction" and "the science fiction of materiality" (p. 181). Bingham considers the "materiality of science fiction" to be society's objectification or materialization of science fiction, and the "science fiction of materiality" to be society's distortion of scientific facts into fiction. According to Bingham, in distorting scientific facts in discourse, fiction functions to shape the public's preconceived ideas of social reality. For example, he discusses the association of *Frankenstein* (science fiction) with biotechnology (material) and GM foods (material), specifically how various representations of the novel *Frankenstein* (literary and cinematic) function to influence the public's preconceived ideas and attitudes about GM technology.

However, Bingham does not appear to distinguish the "materiality of science fiction" from the "science fiction of materiality." Instead, he discusses an interchangeable model that connects the "science fiction of materiality" with the "materiality of science fiction," especially in discourse about the environment. Bingham's concept of the interchangeability of the "materiality of science fiction" and "the science fiction of materiality" provides this thesis' analysis with substantive philosophical reference to support an argument on how their interchangeability might shape the public's attitudes towards GMFs. In addition, Bingham's model supports this thesis' methods for constructing a thematic network that identifies and illustrates interchangeable and ideological connections between GMFs (the material) and the Frankenstein Myth (the abstract).

Finally, Bingham's discussion leads one to consider the extent to which the Frankenstein myth influences and forms the core narrative within critical discourse about the consequences of GMFs to human and environmental health.

Kitzinger's (2009) article has expanded on Bingham's (2002) article by discussing the convergence of fact and fiction and the effect of such convergence on the public's attitudes. Kitzinger examines how the merging of scientific facts and fiction shapes worldviews. She has based her discussion on interviews with scientists, government officials, and media reports. Kitzinger (2009) emphasizes that the convergence of scientific facts and fiction, evinced in dystopian themes, raise public concerns about biotechnology: "Fiction, particularly dystopian science fiction, can have a very powerful, and inevitably negative, impact on an ignorant public, driving 'the masses' to dread the potential of science and technology" (p. 74). Thus, she claims that the media's use of "dystopian science fiction" in discourse does not attend to the main purpose of providing the public with comprehensive understanding of the facts about GM technology. Kitzinger asserts that the public might not be fully armed with comprehensive knowledge of the facts about GM technology, and as such, the "ignorant public" will continue to "dread the potential of science and technology." In addition, "the ignorant public" is susceptible to media constructions, especially susceptible to "dystopian science fiction." She is concerned that the perpetuation of fears about emerging biotechnologies derives from an "ignorant public." She has asserted that the "ignorant public," in addition to staggering real scientific advances, might also "also [fail] to identify fiction as an alternative space for the exploration of issues around science" (p. 83). Kitzinger determines that the power of fiction is to enlighten the public about "issues around science" and she expands fiction's role to be an "alternative space" for public engagement of other issues, such as, the environment.

Overall, Kitzinger provides further insight into the manner in which fiction influences scientific debates. In particular, Kitzinger extends the potential relevance of this present study to inquire into the role of fiction to be either a positive or a negative influence in the public's understandings and perceptions of GMFs.

2.3 Conclusion

Many studies have examined *Frankenstein's* association with biotechnological uncertainty and have examined the novel's appropriation in critical discourse about biotechnology and GMFs, and this study extends their inquiry in several ways—in particular, by examining the origins of *Frankenstein's* association with GMFs and biotechnological uncertainty.

For example, some of these works (such as Holmgreen, 2008; Van Gorp & van der Goot, 2012; Gschmeidler & Seiringer, 2012) have focused on identifying the media's rhetorical strategies to influence public opinion on GMFs. Gschmeidler and Seiringer's (2012) study highlights the extent to which the media communicates valid scientific information about GMFs to the public. Whereas Van Gorp and van der Goot's (2012) study of the "Frankenstein frame" uproots the theme of creation turned against creator used in discourse and highlights its influence on the public's attitude towards GMFs (p. 139). Yet, these scholars do not sufficiently explore the ideologies underlying the media's strategies in transmitting scientific data to the public, especially the use of adverse language that result in public uncertainty about scientific knowledge.

The review has also highlighted several studies (such as Shaw, 2002; and Augoustinos, Crabb, & Shepherd, 2010) that have focused on identifying the public's divisiveness and

uncertainty towards emerging technologies. Yet, they have not examined historical references that echo ideological tensions and divisiveness between society and emerging technologies.

This present study addresses this gap in the literature by exploring core ideologies that arose from the novel's early interpretations. These core ideologies might be influential factors in determining the extent to which they underscore the media strategies in communicating information about GMFs. This exploration of core ideologies in discourse might help to determine the extent to which the public's uncertainty about GMFs correlates with the media communicating valid/invalid information about them.

While authors such as Schoene-Harwood (2000) and Levine and Knoepflmacher (1979) have explored *Frankenstein's* historical references and various literary receptions, these authors do not explore or reveal ideological patterns that connect the novel's past literary receptions to its cultural appropriation in the twenty first century. The authors do not provide an analysis of how allusions to *Frankenstein* sustain sociocultural relevance in discussions of biotechnology as recently as 2015. This thesis addresses these gaps by providing key historic understanding of the ideological patterns embedded within varied rhetorical devices/strategies that influence modern public perceptions of GMFs. This type of inquiry provides insights into the historical trajectory of these patterns that determine the extent to which metaphorical devices and rhetorical strategies influence public attitudes towards GMOs.

Studies such as Bingham (2002); Botting (2003); Hones (2005); Kitzinger (2009); van der Laan (2010); and Swart (2014) have discussed the media's use of metaphorical devices and rhetorical strategies and have examined how allusions to *Frankenstein* invert the preconceived boundaries between fact and fiction. The inversion of these boundaries might suggest that fiction does not necessarily mean misrepresentation, and as such, the media's use of metaphors portrays

a certain truth that ultimately gives fiction some form of validity and significance within modern discourse about biotechnology. However, these authors do not sufficiently explore the inversion of these boundaries in order to understand the extent to which the public's attitudes towards biotechnology are influenced by the media's communication. This research intends to fill this gap and explore how the media maneuver back and forth between the lines of fact and fiction in their communication of scientific knowledge to the public. An investigation into how media mediates the lines of fiction and fact might explain the origins of how the Frankenstein myth came to be associated with biotechnology.

While most of the literature is concerned with the influence of the metaphor and rhetoric on the public's attitude towards biotechnology, this study sets forth a different methodology in the construction of a thematic network (mythological system). The aim of this network will be to locate interconnected systems of communications that expose how the Frankenstein myth's meaning is sustained and collectively agreed upon within modern discourse.

Altogether, the review contributed to the current research in that it led to a consideration of theories that discuss the philosophical thread that connects fact and fiction as well as past and present ideologies. The review also inspired this thesis' methods in that the authors' works helped to focus attention on constructing a thematic network (mythological system) that can trace the philosophical thread or other factors that connect fact and fiction. The literature review's overall influence on this research will be reflected in the paper's methods, theory, and analysis chapters since a thematic network might help to account for the origins of *Frankenstein's* association with biotechnological uncertainty.

Chapter Three: Theory

This chapter examines theories used in the analysis. The selected theories had to be capable of illustrating how a classic novel like *Frankenstein* became a myth that is appropriated in modern critical discourse. In other words, these theories needed to account for how *Frankenstein* transitioned from a work of fiction to reality in contemporary critical discourse. In addition, the selected theories needed to support arguments about how the Frankenstein myth endured beyond its era of origin to find sociocultural relevance in our era.

Overall, this thesis uses an interpretive paradigm to examine the shift in communication genre and the relevance of the Frankenstein myth across eras. The interpretive paradigm was necessary because the thesis is ultimately a subjective examination of the endurance of the Frankenstein myth.

3.1 Theories deliberated

This section explains the deliberative process involved in selecting the primary theoretical framework.

Early in the development of the project, rhetorical and literary perspectives were explored in depth. However, in the end, Semiotics was the preferred choice for this study.

3.1.1 Rhetoric of Narrative

Rhetorical theory was considered since it could have facilitated the identification, and explanation of rhetorical strategies found in discourse, such as metaphor, which creates both allure and aversion in the public's attitudes towards ideas found within the novel *Frankenstein*. The theory has the potential to illustrate the structures within language that contributed to *Frankenstein's* ideas becoming relevant within contemporary critical discourse.

According to researcher professor Porter Abbott (2008), the "rhetoric of narrative" is an exploration of how fiction persuades readers, and facilitates analyses of rhetorical strategies, such as metaphor, which is ideal to map persuasive movements within discourse and to locate analogies and patterns of ideas between the world of fiction and the real world (p. 40):

> The rhetoric of narrative is its power. It has to do with all those elements of the texts that produce the many strong or subtle combinations of feeling and thought we experience as we read. These include those elements that inflect how we interpret the narrative: that is, how we find meanings in it (p. 40).

According to Abbott, narrative's foundational "power" is found within the "elements of the texts," such as grammar and logic. Grammar and logic allow readers to analyse and identify order and patterns, and the rhetoric of these patterns influences how readers "interpret the narrative." Interestingly, Abbott suggests that narratives are representations of events that influence readers to believe whether these events are real or unreal.

However, the theory of the "rhetoric of narrative" is ideally suited for illustrating layers of meaningful connections within narratives, and its use is usually focused on a specific narrative in a specific historical period. In effect, rhetoric is grounded within a particular text by a specific rhetor, and tends to focus on an examination of the rhetorical features that are intrinsic to the narrative. In addition, the theory focuses on ideological and philosophical meanings unique to a given narrative.

Given the ideological scope and varied bodies of discourse covered by this thesis, it was necessary to find theories that could examine the Frankenstein myth's ideological and philosophical meanings in diverse discourses across several epochs, genres, and rhetors.

3.1.2 Literary Theories

Literary theory and its many tools could have been used for the examination of the multitude of concepts, points of views, and methods applied during the novel's reception or criticism over a long period. Selden and Widdowson (1993) have noted that

> one can think of the various literary theories as raising different questions about literature. Theories may ask questions from the particular point of view of the writer, of the work, of the reader, or of what we usually call 'reality.' (p. 3)

Selden and Widdowson's mention of "reality" is a reminder that literary theories have primarily been designed for the analysis of fictional or poetic texts. The researchers suggest that literary theories are concerned with genres that do not directly address discourse about "reality." Although the novel *Frankenstein* has spawned the Frankenstein myth that transcends reality, the texts studied for analysis in the thesis are primarily non-fictional and are part of social reality.

Nevertheless, a branch of literary theory, reception studies, was considered to be relevant since scholars have built a body of theory that concerns the cultural communication and reception of various texts and philosophies. The theory had potential to illustrate the relationship between a) past and present receptions of literary works and b) past and present cultures.

Hans Robert Jauss (1998), reception studies' principal theorist, has commented on the importance of reception studies in the study of literary history:

> The historical life of a literary work is unthinkable without the active participation of its addressees. For it is only through the process of its mediation that the work enters into the changing horizon-of-experience of a continuity in which the perpetual inversion occurs from simple reception to critical understanding, from passive to active reception, from recognized aesthetic norms to a new production that surpasses them. (p. 1199)

Jauss argues that the "horizon-of-experience of a continuity," or a series of events over time, is necessary for the historian to understand the significance of historical texts. Jauss posits that the historian's "simple reception" or "passive reception" of works might include analyzing the skill of the author, or being attentive to the quality of the works' writing. For Jauss, a proper literary history does not arrive from "passive" receptions of works. Instead, he argues that historians must be active and critical, and as such, proper literary history is "sustained and enriched in a chain of receptions from generation to generation" (p. 1199). According to Jauss, the "chain of receptions" highlights the importance of the relationship between past and present receptions, for it might reveal important explanations of motivations for the creation of historical works.

However, the "chain of receptions" that examines relationships between past and present receptions is not the appropriate kind of "reception" pertinent for this thesis. This present study does not involve an examination of how shifts in Western culture's values shape the manner in which audience receive texts, but rather involves an examination of how ideas from the novel *Frankenstein* shape Western values about biotechnology through critical discourse.

3.1.3 Linguistic theory

Linguistic theory was considered next, since it could have facilitated the description and interpretation of meaning in linguistic forms of communication in scientific journals and articles and their effects upon the public. The theory could have been used to identify shifts in transmission of communication within diverse texts across several epochs. In addition, the theory could have been used not only to interpret meaning in texts from a social perspective but also to interpret language use and its implicit meaning embedded within texts.

Linguistic theory refers to a theoretical framework used in describing what constitutes language. According to the linguist Chomsky (2005), "'language' as an object of rational inquiry

can be developed only on the basis of rather far-reaching abstraction" (p. 219). An inquiry into "abstraction[s]" is suitable for studies that seek to identify abstract patterns among grammatical structures, e.g., syntax, morphs, phonemes, to name a few. In addition, linguistic theory is suitable for an inquiry into "abstractions" since it explores communication of interactions and ideologies in both implicit and explicit forms of grammar. Implicit and explicit forms of grammar are necessary to illustrate complexities in communication of abstract ideas, e.g., logic, and variations in transmission of meaning.

It was inspiring to find that Thelwall and Price's (2006) quantitative linguistic approach described and tested techniques for categorizing new words (abstractions) in online discourse, such as "Frankenscience words" (p. 1331). The researchers have asserted the need for combining online search techniques and have demonstrated the potential of using corpus linguistics in order a) to analyze the evolution of language by identifying "hybrid word family members" and b) to analyze the construction of various abstract variations of "Frankenscience words" used in various GM foods debates (p. 1331). The researchers searched in Google for known "franken" words and constructed a graph using a "logarithmic scale" and concluded from the graph that the word "frankenfood" received the most "significant usage rate" (pp. 1333–1334). The "significant usage rate" is important because it highlights the relevance of the use of the term *frankenfoods* in the GM foods debate. Thelwall and Price have stated, "The frankenfood metaphor was popularized in the press and gave rise to a *Franken*-hybrid word family, including related portmanteau words such as *frankenscience* and *frankencrops*" (p. 1331).

However, unlike Thelwall and Price's (2006) study, this thesis not only involves an examination of the variations of the use of symbols but also involves an examination of both linguistic and mythological systems that explain how *Frankenstein* endures as myth and became

associated with technological uncertainty within critical discourse. Given the focus of the research question, the aim of linguistic theory on its own does not fit the research's aims in exploring how the use of the term "Frankenstein foods" influences social attitudes about biotechnology. Linguistic studies tend to treat language as an "object of rational inquiry" (Chomsky, 2005, p. 219). Such attempts at a "rational inquiry," as shown in Thelwall and Price (2006), aims to analyse language use in order to distinguish the gaps between abstract variations of metaphors, such as, "Frankenscience words," and social reality. Instead, this thesis explores language use that bridges these gaps between abstraction (the Frankenstein Myth) and social reality (biotechnology) and explores a coherent framework that enables an understanding of the properties that connect them.

It was imperative to find a theory that could examine sub-systems, for instance, mythological systems, in order to account for the Frankenstein myth's endurance across genres and eras.

3.2 The Selection of Semiotic Theory

In the attempt to identify these properties, Semiotics proved to be a better fit than the types of linguistic theory examined above. Semiotics presents itself as a more pliable tool for theoretical analysis in understanding the role of fictional narratives within the social world. In choosing semiotics, it was considered that meanings within language do not necessarily account for underlying abstract patterns. A word or even a phrase oftentimes have varied and implicit meanings in various contexts. Thus, semiotic theory was incorporated to best illustrate how these underlying abstract patterns connect illusion to reality in critical discourse.

3.2.1 Semiotic theory according to Saussure

In *The Routledge Companion to Semiotics*, Cobley (2010) paraphrases Thomas A. Sebeok who was instrumental in the development of semiotics as a study of "the difference between illusion and reality" (as quoted in Cobley, p. 3). Semiotics offers valuable insights into principles of interpretation upon which signs are used to interpret "reality." In order to interpret "reality," semiotics aims to distinguish illusions from reality. Such aims in semiotics might have influenced the scientist Ferdinand de Saussure's structuralist linguistics, semiology. Saussure's (1916/1972) semiology has provided a general theory of language and signs systems:

> Language is a system of interdependent terms in which the value of each results solely from the simultaneous presence of the others…Content is really fixed only by the concurrence of everything that exists outside it. Being part of a system, it is endowed not only with a signification but also and especially with a value. (as quoted in Noth, 1985/1990, p. 61)

The "value" is the meaning of a term in relation to other terms within the "system" of "interdependent terms." For Saussure, language is a "system" that organizes thoughts that would otherwise have no distinct focus. Hence, language's function is independent of its referents and is a social construct.

Since language is a social construct, Saussure's linguistic system helps to examine how the Frankenstein myth (the illusion) became appropriated in critical discourse to represent GMFs (reality). When using a Saussurean structuralist linguistic system, there is consideration of how *Frankenstein* has endured and became relevant within contemporary critical discourse. In addition, it is necessary not only to inquire into the endurance of *Frankenstein*, but also to inquire into the endurance of the Frankenstein myth. In order to investigate the Frankenstein

myth's endurance, a Saussurean linguistic system provides the structural foundation that is necessary first to investigate how *Frankenstein* functions as a sign within the linguistic system.

3.2.1.1 Saussure's linguistic-semiotic system

Saussure (1916/1972) aimed to transform linguistics into a rigorous scientific discipline. In order to systematize linguistics, Saussure has postulated language as a system, *langue*, which illustrates the arbitrary and abstract nature of language. In essence, Saussure's linguistic system identifies with semiotic approaches. In particular, his linguistic system aims to combine linguistics within an empirical method that guarantees it some form of scientific validation. Henceforth, the term *linguistic-semiotic system* describes Saussure's linguistics within the field of semiotics.

To illustrate, in Saussure's linguistic-semiotic system, a sign has two signifying components, the *signifier* (the part accessible to the senses) and the *signified* (the meaningful content or mental concept). According to Cobley and Schulz (2013), Saussure's linguistics show how the sign's signifier and the signified are bounded together:

> Saussure insisted that there was a *signifie* bound to each *significant* but that the reasons for their binding was not natural or preordained. This is, for him, the most fundamental characteristic of the sign: that the relation in it is arbitrary. (p. 224)

Since the connection between the *signifie* (the signified) and *significant* (the signifier) is not "natural or preordained," then their relationship is "arbitrary." An arbitrary relationship is determined by cultural convention, meaning the extent to which a given culture collectively agrees upon the accuracy or inaccuracy of the sign's representation. The extent to which the signified is accurately represented in the signifier is an inverse measure of how conventionalized it is. That is, the greater the sign resembles the object it represents, the less conventionalized it is.

For example, a photograph of a dog is less conventionalized than a drawing of a dog since the signifier (the photograph of the dog) represents accurately a universally known idea (the signified) of an actual dog. The photograph of the dog in and of itself carries no intrinsic meaning. Instead, the photograph carries culturally generated meaning, that is, it is determined by cultural convention.

Since meaning is determined by cultural convention, Saussure has postulated the concept of the *parole*, which shows that signs do not refer to objects but instead refer to the difference in the relationship among all the other signs in the language system, langue. For example, the word "dog" (the signifier), like the photograph of the dog, has no intrinsic meaning in and of itself. Instead, the signifier carries culturally generated meaning and is determined by convention within langue.

Saussure's idea of cultural convention within a system of language helps to determine that the Frankenstein myth (the signifier) carries meaning only by convention. The myth's meaning is determined only by convention since its signifier and signified both represent an abstract idea. Since the Frankenstein myth is an abstract idea, its meaning attracts varied interpretations and representations within social reality.

Saussure's (1916/1972) linguistic-semiotic system is beneficial in examining how an abstract idea attracts varied interpretations and representations within social reality. Saussure has argued that while an abstract idea attracts varied interpretations, meanings, and representations, these are ultimately founded upon the material:

> The essential point is that abstract entities are based ultimately upon concrete entities. No grammatical abstraction is possible unless it has a foundation in the form of some series

> of material elements, and these are the elements one must always come back to finally. (p. 137)

Saussure argues that "abstract entities," or abstractions, ultimately are situated in "concrete" materials. He asserts, "no grammatical abstraction is possible" without the foundation of "material elements," or the physical, and determines that the abstract must ultimately relate to the "material."

However, Saussure does not sufficiently describe the nature of the relationship between the abstract and the material. In particular, he focuses on the idea that words have no direct connection to reality, and so he highlights the idea that meaning or ideas must ultimately have foundation in "material elements." However, the relationship between the material and the abstract does not account for abstract ideas such as "joy" or "desire," which have no foundation in "material elements." For example, the word "joy" (the signifier) carries meaning only by convention. There are objects of joy or objects of desire, but abstractions such as joy or desire are not intrinsically situated within objects and have no intrinsic relationship with them. In general, it is only through convention that society can collectively determine the relationship between "material elements" and an "abstract" idea, that is, the relationship between an object and joy.

Nonetheless, Saussure's ideas are valuable in examining the relationship between material elements and abstract ideas derived from the *Frankenstein* novel. In addition, Saussure's ideas help to determine how the Frankenstein myth's conventionalised meaning is "based ultimately upon concrete entities." If Frankenstein myth's signifier is ultimately based on material elements, then it is appropriate to inquire into the Frankenstein myth's social relevance and the properties that connect the myth (the abstract) to material elements, like food.

Nevertheless, Saussure's argument about how signs connect abstract entities to material elements leads to further discussions about how a sign's meaning, which is determined by convention, endures while it is transported across epochs. Saussure (1916/1972) has made it clear that even though the sign's meaning is determined by convention, it is not open to unrestricted interpretations or representations while it is transported across epochs:

> The sign is subject to change because it continues through time. But what predominates in any change is the survival of earlier material. Infidelity to the past is only relative. That is how it comes about that the principle of change is based upon the principle of continuity. (p. 75)

The *principle of change* explains how the linguistic sign's meaning can change to fit other social contexts while it is transported across several eras. Saussure's "principle of change" is determined to be the linguistic sign's "variability," which "allows linguistic signs to be changed with some rapidity" (p. 74). The sign's "variability" (changeable meaning) is immanent in its transport across time. Hence, there is a shift in the relationship between the signifier and the signified once there is either a conceptual or a grammatical change in the linguistic sign. Saussure has provided an example by contrasting the old German word "dritteil" (third part) that transformed to the modern German word "drittel" (one-third). Saussure notes that the concept remained the same even though the grammatical form of the signifier changed. In this case, there is a shift in the relationship between the signifier and the signified due to the change in the signifier. However, in a homonym, for example, the word "bark," the signifier is unchanged but the concept can be different. As a result, in homonyms there are shifts in the relationship between their signifiers and signified due to the change in concepts.

Saussure's principle of change helps to illustrate how the shift in the relationship between the Frankenstein myth's signifier and signified accounts for its enduring transport across time. As mentioned, there is a shift in the relationship between the signifier and the signified once there is either a conceptual or a grammatical change in the linguistic sign. Consequently, the Frankenstein myth might have endured since the word "Frankenstein" (signifier) is unchanged even though the concept of the myth (signified) changes in its transport across time.

As shown, a linguistic sign's changeable meaning (concept) and grammatical form are immanent in its transport across time. As a result, there is always a shift in the relationship between the signifier and the signified. The shift in the relationship between the signifier and the signified does not fully account for a sign's enduring transport across time. Hence, Saussure has suggested that the linguistic sign's propensity for change is governed by the "survival of earlier material" or a connection with its past meaning. The *principle of continuity* explains how the linguistic sign's meaning is sustained by its connection with its past meaning. According to Saussure, a linguistic sign's "invariability" refers to its assigned collective social meaning due to an "inheritance from the past" (p. 71). While the linguistic sign is transported across eras, its meaning is connected to an inherited meaning from the past, that is, its meaning is sustained by the survival of its past-inherited meaning.

In addition to the sign's inherited meaning, Saussure has suggested that the sign's "arbitrary" nature sustains its meaning over time (p. 73). The "arbitrary" nature of the sign means that the relationship between the sign's signifier and signified within the language system has no practical foundation. Given there is no practical foundation in the relationship between the sign's signifier and signified, the sign's meaning resists change. Therefore, in the absence of

any practical foundation in the relationship between the sign's signifier and signified, a sign's meaning is sustained due to its connection with its past-inherited meaning.

Accordingly, the endurance of the sign's meaning while it transports across time appears to rely on a) its propensity for change in order to fit varied social contexts and b) its resistance to change due to its relationship with its past-inherited meaning. According to Saussure, without a balance between the sign's propensity for change (*variability*) and its resistance to change (*invariability*), the sign might not be able to transport across eras with meaningful significance elsewhere. Saussure's theory reveals that both variability and invariability work in tandem to realise a sign's successful transport across eras.

Saussure's ideas of a balance between a sign's variability and invariability are important tools for an analysis of the Frankenstein myth's successful transport across eras. These ideas can illustrate how the Frankenstein myth comes to be adapted to cultural and technological changes over time (its variability), and the degree to which it retains its past meaning in contemporary critical discourse (its invariability).

In summary, Saussure's variability and invariability provide valuable insight into further understanding the endurance of *Frankenstein* and, in effect, the endurance of the Frankenstein myth. It is important to note that Saussure's theories describe the signs only within the linguistic system. Nonetheless, his linguistic-semiotic system not only helps to investigate how *Frankenstein* functions within a linguistic system but also helps to investigate and understand how the novel functions within Roland Barthes' ideas of a mythological system.

3.2.2 Semiotic theory according to Barthes

Like Saussure, Barthes also has also explored a sign's meaning in the linguistic-semiotic system. However, in his book *Mythologies* (1972) Barthes explores a sign's meaning within a

mythological and semiotic system. Barthes explores ideological and philological foundations behind bourgeois myths in culture. His work, in essence, is a criticism of narratives of myths and is grounded in constructivist epistemology, which holds that there is no objective truth to reality. Barthes situates myth within two semiological systems, namely, *linguistic* and *mythological.* For Barthes, these systems function simultaneously on two levels of meaning, namely, the linguistic level and the mythical level. Henceforth, the term *mythological-semiotic system* describes Barthes' ideas of myth's function within the field of linguistics and semiotics.

3.2.2.1 Barthes' mythological-semiotic system

Whereas Saussure's linguistic-semiotic system focuses on the idea that myth is a connection between the abstract and the material, Barthes' mythological-semiotic system goes further in illustrating the nature of myth to be more than a paradoxical connection between the two. Particularly, Barthes (1972) has focused on the idea that myth is a functioning communication system: "Myth is a system of communication, that it is a message" (p. 109). Barthes' ideas are useful to show how myth's "communication system" distorts the material. Barthes' mythological-semiotic system helps a) to examine how the Frankenstein myth distorts ideas across genres and epochs and b) to provide insights into how the Frankenstein myth comes to be adapted to cultural and technological changes over time, and the degree to which it retains its meaning.

To illustrate, Barthes has analyzed an image from the French magazine *Paris-Match* that depicts a young Negro boy saluting the French flag. Barthes asserts that the image is not a symbol of the French Empire. Instead, he asserts that the image of the young Negro boy saluting the French flag is an association with a larger concept that represents French imperialism.

In Barthes' linguistic-semiotic level of meaning, there is the *signifier* (*meaning*) and *signified* (the mental concept). That is, the meaning of the image denotes exactly what it depicts and is interpreted accordingly. In Barthes' explanation of the signifier's "meaning," the signifier already "belongs to a history" (p. 117). In his linguistic-semiotic system, the "meaning" contains the full unique knowledge of the history of an event's ideas, facts, and details and retains unity and fullness in spatiality and principles. In Barthes' linguistic-semiotic system, the "meaning" of the image is a simple representation, that is, the image depicts a young Negro boy saluting the French flag.

On the mythical level of meaning, that is, in Barthes' mythological-semiotic system there is *form* and *concept*. Barthes uses the terms "form" and "concept" to illustrate the functions of the signifier and the signified within the mythological-semiotic system. Barthes has explained that the signifier's "meaning" becomes "form," and in "form" the "history evaporates" (p. 117). For example, the image of the saluting Negro and its exact "meaning" "evaporates" and is emptied, but not completely, from within the linguistic system to assume "form" within the mythological system. Subsequently, in form, the image no longer represents exactly what is shown but its representation is associated with a myriad of possibilities of representations. Thus, Barthes' mythological-semiotic system functions like an active sub-system that stores these possibilities of representations in form beneath the linguistic system. Notably, the form is like a stockroom that stores the image's superficial and disjointed meaning. Hence, the process of emptying the image's meaning into form is a description of the interpretation and formation of myth.

Barthes' ideas about the interpretation and formation of myth are important for this thesis' study since on the linguistic level of meaning, *Frankenstein* holds its meaning in the

literary sense. In the linguistic-semiotic system *Frankenstein* is a novel with a plot, characters, and setting and all these establish the novel's unique history. However, within the mythical level of meaning, *Frankenstein's* unique history evaporates into form to be the Frankenstein myth. In essence, Barthes' ideas lead to further understanding that the loss of *Frankenstein's* unique history might be the formation of the Frankenstein myth.

In general, Barthes describes the formation of myth as a deterioration of meaning. In particular, he asserts that the formation of myth is an "abnormal regression" from "meaning" to "form," that is, a "regression" from the linguistic level to the mythical level of meaning (p. 117). Barthes refers to the image from the *Paris-Match* to illustrate an "abnormal regression." In form, the exact meaning of the image evaporates such that it no longer simply depicts an image of a Negro boy saluting the French flag. Instead, the evaporation of the exact meaning of the image results in its "abnormal regression" from meaning (linguistic system) to form (mythical system). It is in form that the image is associated with French imperiality.

The association of the image with French imperiality is in effect a distortion of meaning. Barthes (1972) has suggested that myth's "function is to distort, not to make disappear" (p. 121). As mentioned, the form functions in the mythological system like a stockroom that stores disjointed meaning. The exact meaning of the image does not "disappear" entirely but is only emptied and distorted and loses its significant content to assume form where it is associated with French imperiality.

In addition, in Barthes' example, the form's association with French imperiality is a *concept*, and Barthes has used the term "concept" to describe both the linguistic and mythical levels of meaning. According to Barthes, the "concept" "is not at all an abstract, purified essence; it is a formless unstable, nebulous condensation, whose unity and coherence are above

all due to its function" (p. 119). Barthes has defined the "function" of the "concept" to be a "tendency," which is its predisposition to be usurped into various interpretations through diverse and irregular associations (p. 119). As a result, the "concept" is an irregular association of abstractions with the material. Barthes uses the *Paris-Match* example to illustrate what he means by a "concept." According to Barthes, the image in the *Paris-Match* of the young Negro saluting the French flag "is the very *presence* of French imperiality" (p. 128). The image of the saluting Negro is a concept of what French imperiality means. The concept of the image is not a symbol of French imperiality, nor is the concept of the image in fact French imperiality. Instead, the concept of the image is an extension, or a connection that is associated with a distorted idea of what French imperiality means. Hence, the concept fills the form of the myth and assigns the image of the saluting Negro to have a connection to "French imperiality." In this way, there can be many signifiers where the concept assigns connected (mostly irregular) meanings to the image. For myth, the concept of the image is a distortion and simultaneously an extension of many concepts of French imperiality.

As mentioned, these concepts are in essence irregular associations of abstractions with the material. Accordingly, concepts contribute to the myth, which in essence distorts the knowledge of history, ideas, and facts. Barthes has suggested, "The relation which unites the concept of the myth to its meaning is essentially a relation of *deformation"* (p. 122). In essence, the relation between the concept of the myth and the meaning can only be a relation of "deformation" since the concept obtains disjointed knowledge from the stockroom or form, and as such, can only contribute to the myth a distortion of meaning.

Barthes' mythological-semiotic system helps to show how the Frankenstein myth is a concept that both generates and constitutes irregular associations or connections between the

abstract and the material. These irregular connections are the ideological and philological foundations that facilitate and fill the "form" of the Frankenstein myth.

3.2.3 Ferrell's theory of myth

Ferrell's ideas are valuable for this research project since they probe sufficiently into how abstract ideas in myth connect to both critical discourse and narratives. While Barthes has examined ideological and philological foundations behind bourgeois myths, Ferrell (2000) has examined the relationships between ancient myths of Judeo-Christian, Greek, Celtic and Eastern origin, and early twentieth century films and literature. Both Ferrell and Barthes have discussed myth's effect on culture, whereas Ferrell has analyzed what ancient myths reveal about modern culture and their symbolic effect.

In his book *Literature and film as modern mythology*, Ferrell (2000) has defined a myth to be a "story" that attempts to communicate information about reality (p. 4). In effect, the "story" communicates a unique perspective of the social world by revealing connections between social reality and abstractions. In essence, the connections between social reality and abstractions reveal that myth reproduces and constructs a reality by way of concepts. According to Ferrell (2000),

> In form, a myth is a story one person conceptualizes in order to reveal a specific relationship to a reality he or she knows exists but cannot define or locate objectively. From early human history into the nineteenth century, mythology, or metaphoric explanations, functioned as a source for both scientific and religious explanations in most cultures. The myth form function is to communicate an understanding about the world. (p. 5)

Ferrell's passage leads one to consider the difficulty of "locat[ing] objectively" or "defin[ing]" exactly a "story's" concepts without these concepts being grounded in reality or connected to reality. The difficulty is that myths only "communicate an understanding about the world" and do not necessarily communicate the truth about the world. The difficulties in communicating truths are manifested in "scientific" and "religious" explanations about natural and social phenomenon, whereas myth is that "source" that functions between them. For example, according to Ferrell, in the search for answers to the origins of Man and the universe, science and religion offer an understanding of "how" the universe came about, but "why" the universe exists remains a perplexity (p. 5). According to Ferrell, the knowledge gap is never filled appropriately and the perplexity only continues to be sustained by myth. In sustaining the perplexity, myth constructs stories about the universe origins and man by connecting abstractions with social reality. Ferrell's discussions enable me to determine how myth facilitates varied interpretations of a "story" and lead to further understanding of how society connects abstractions to the material and subsequently lift the Frankenstein myth from the confines of fiction to have a place in social reality.

Correspondingly, myths connect what is known to the unknown by their very nature to connect the material to the abstract. Ferrell has asserted that the nature and function of myth is to connect things identifiable in social reality to abstractions: "Fundamentally, myths serve a specific purpose: to connect the physical, the known, with the abstract, the spiritual, the unknown" (p. 7). In this passage, Ferrell provides an understanding of myth's adhesive quality by way of its "purpose to connect the physical" (the *known* social reality) to the "the spiritual, the *unknown*" (abstract). For example, in Hesiod's poem *Theogony* (Origin of the Gods) the poet gives the account of the creation of the world. The myth includes the tale of Prometheus and his

punishment. The poem's didactic quality facilitates its connection to social reality by giving guidelines on moral and ethical behaviour. Specifically, the poem shows the bad consequences that follow from deceit and disobedience. These guidelines are relatable within social contexts, and as such, facilitate the myth's connection to social reality. In particular, the myth's connection between the abstract (the story of the gods) and social reality (moral and ethical consequences to behaviour) provide the "story" with unique perspectives in its interpretation of social reality.

Ferrell's ideas about myth's "purpose to connect" the abstract to social reality, lead to the determination that the Frankenstein myth is a manifestation of a connection between the Frankenstein myth (the abstract) and social reality (the physical).

Yet, it does not appear that the Frankenstein myth endures solely due to myth's ability to connect the abstract to social reality. Instead, it appears that the endurance of the Frankenstein myth might also be due to the myth's ability to incorporate emotive components within the connection to social reality.

If myths incorporate an emotive component within the connection between the abstract and social reality, then, according to Ferrell (2000), "myths, in their most basic form, are simply extensions of our human consciousness, being expressed as hopes and fears" (p. 7). Human expressions of "hopes and fears" constitute the emotive component within narratives of myth and "connect the physical, the known, with the abstract." For example, in Hesiod's poem, there are consequences to Prometheus' immoral conduct. As a result, the poem stirs the fear of the consequences of what can happen if one behaves immorally or unethically. The presence of the emotive component—which Ferrell conceives as expressions of "hopes and fears"—within narratives of myth might explain how the Frankenstein myth is an expression of fear (technological uncertainty) within critical discourse, even when critical discourse does not take

the form of a narrative. For example, his discussion of myth helps build further understanding of how expressions of “hopes and fears” take shape not only within narratives but also within critical discourse.

Chapter Four: Methodology

This chapter covers the two major methods, "the history of ideas" and "thematic networks." The rest of the chapter narrates the methods systematically, from paradigm assumptions, selection of texts, analysis of texts, and finally validation. First, there is a discussion about the history of ideas methodology in the methodological literature since they form the overarching method for this thesis.

4.1 Discussion of the methodology

The two major methods in this chapter are the history of ideas and thematic networks. These methods are interrelated in this thesis, and as such, are useful for an examination of the historical and thematic progression of ideas into present discourse.

4.1.1 The "History of Ideas" Methodology

The history of ideas enabled an examination of early literary and communication scholars' analysis of complex philosophical and ideological themes found within the novel *Frankenstein*. In addition, the methodology helped to explore the use of the term "Frankenstein foods," and how the use of the term gained contemporary relevance from a historical perspective.

The study of the history of ideas is concerned with identifying and explaining the progression and the communication of ideas over time. Scholarship in the history of ideas has yielded several approaches and contributions that comprise research in the history of philosophy (in order of publication: Lovejoy, 1933/1965; Geertz, 1973; Lacapra, 1980; Bevir, 1999; Palumbo-Liu, 2008; Betti & van den Berg, 2014). Lovejoy's approach to the history of ideas performs beyond a surface analysis of context and provides valuable insight into this study's examination of the core features by which historical ideas shift and influence present discourse about biotechnology.

Lovejoy (1933/1965) was an intellectual historian and a prominent proponent of the methodology. He has analyzed the history and influence of religion and scientific thought in culture. His examination started from the Platonic tradition and extended to the period of Romanticism. Lovejoy (1933/1965) has noted that

> It is a part of the eventual task of the history of ideas to apply its own distinctive analytic method in the attempt to understand how new beliefs and intellectual fashions are introduced and diffused, to help to elucidate the psychological character of the processes by which changes in the vogue and influence of ideas have come about; to make clear, if possible, how conceptions dominant, or extensively prevalent, in one generation lose their hold upon men's minds and give place to others. (p. 20)

Lovejoy's "distinctive analytic method" is a study of the history of ideas. His application of the methodology goes beyond the surface analysis of context in order to examine the "psychological character" of how ideas shift and influence culture. In addition, Lovejoy not only investigates the "psychological character" of these ideological shifts in historical doctrines but also "cuts into the hard-and-fast individual systems and, for its own purposes, breaks them up into their component elements, into what may be called their unit-ideas" (p. 3). Lovejoy adopts the "unit-ideas" to be his basic unit of analysis. He divides "individual systems" or belief systems into "component elements" ("unit-ideas") in a distinctive way and then regroups the parts and analyses them from a unique perspective.

A major strength in Lovejoy's unit-ideas methodology is that he locates an idea's unique historical development and is able to hypothesize about the unit. According to Lovejoy, while ideas progress and develop into various patterns, the historian of ideas goes "behind the superficial appearance of singleness and identity" to trace the unit-ideas' evolution and describe

their unique historical development (p. 6). Lovejoy goes beyond the unit-ideas' "appearance of singleness and identity" to describe the unit-ideas evolution as the foundation of the history of ideas. For example, he identifies the unit-ideas and describes their rise (beginning) and decline (collapse) in new forms and patterns, namely, ideological shifts, in different periods throughout history.

Lovejoy's method of historical examination is relevant to this thesis, for he not only analyzes ideological shifts within one generation, but he also analyzes the "psychological character" of how dominant ideologies fall and give way to the rise of new ones across generations. For example, Lovejoy discussed the influence of ideologies such as the "principle of plenitude," a basic unit of analysis ("unit-idea") that he ascribes to be an important "component element" in seventeenth and early eighteenth-century beliefs (p. 288). Lovejoy defines the principle of plenitude to be a universe in which

> the range of conceivable diversity of *kinds* of living things is exhaustively exemplified, but also any other deductions from the assumption that no genuine potentiality of being can remain unfulfilled, that the extent and abundance of the creation must be as great as the possibility of existence and commensurate with the productive capacity of a 'perfect' and inexhaustible Source, and that the world is better, the more things it contains. (p. 52)

Lovejoy's "principle of plenitude" as a "unit-idea" reflects a principle that demonstrates a philosophy of "abundance," the existence of a "'perfect' inexhaustible Source," and the fulfilled potentiality of being. He specifies and describes deep-rooted attitudes that project the desire for absolute perfection in nature to fulfil the potentiality of being. According to Lovejoy, the "principle of plenitude" contributed to the belief in "the rationality, the perfection, the static completeness, the orderliness and coherency of reality" (p. 288). The strength in the "unit-idea"

method is that Lovejoy is able to uproot the "psychological character" or "rationality" of a culture's beliefs, and as such, he is able to provide analytical data to arrive at a comprehensive understanding of historical events.

However, there are also weaknesses in his methodology. Lovejoy does not sufficiently explain how he identifies and traces "rationality," the "psychological character," and beliefs that were not explicitly expressed in historical texts.

Notwithstanding, Lovejoy's "unit-ideas" approach to the methodology is relevant to this project's methods. His method of locating the "unit-ideas" is the core methodological foundation for locating and gathering clusters of "concepts" that form the Frankenstein myth. The identification and examination of the "unit-ideas," namely, the core concepts, potentially leads to further examination and explanation of how these concepts shift, form patterns, and endure across several eras. The method is also appropriate for the construction of a thematic network since it would facilitate the tracking of the "unit-ideas'," or concepts', "evolution and describe their historical development." In addition, the method fits this research's inquiry since it would go beyond a surface examination to investigate the "psychological character" by which the unit-idea or core concept of the Frankenstein myth shift and influence modern discourse about biotechnology.

4.1.1.1 Common criticism of the "History of Ideas" method

Several authors have discussed that the main challenge of the history of ideas methodology is to control biased interpretations of historical texts (such as Bevir, 1999; Skinner, 2002; Hume, 2005). Bevir's and Skinner's criticisms of the method have offered pertinent information that was useful to control biased interpretation in the process of the thesis' research.

The issue of biased interpretation appears to motivate Bevir's (1999) normative discussion of logic in the history of ideas. He has used analytic philosophy to examine forms of appropriate reasoning to the methodology and has postulated logic to be the appropriate reasoning in order to counter the problems in the study of the history of ideas.

Bevir has thoroughly addressed the historian's problem of asserting objective knowledge about history. Bevir suggests frameworks (logical structures) that might produce objective knowledge about history. According to Bevir, these frameworks help to build a logical investigation into the study of the history of ideas. He has asserted that the study of the history of ideas should be concerned with "what historians of ideas ought to do, not what they do do" (p. 9). Bevir suggests that what a historian of ideas "ought to do" is to emphasize the use of logical structures (frameworks) in their analysis of historical data. He discusses that these structures ought to be forms of reasoning, such as, "forms of justification" and "explanatory reasoning" (p. 9). The "forms of justification" consist of facts and objective methods of data analysis, and they facilitate verifiable testing of facts and rival theories. Bevir contends that in the absence of "forms of justification" the methodology might not be apt to bring sensible deliberation to the historical progression of historical ideas. The forms of "explanatory reasoning" deal with analysis of "causal" and "conditional" explanations (p. 11). "Causal" explanations refer to events that are proper to scientific research. For example, "causal" describes one action that makes the occurrence of another action inevitable due to natural laws. "Conditional" explanations refer to rational action that gives a reason (non-scientific) for that action to bring about another action.

Since this research is a qualitative study, Bevir's ideas on the "conditional" "forms of justification" are plausible for constructing a thematic network (framework). "Conditional" explanations (non-scientific), as opposed to "causal" explanations, fit better for explaining non-

scientific concepts about the endurance of the Frankenstein myth. Thus, Bevir's ideas about the use of logical "frameworks" motivated the construction of a coherent thematic network that provides "conditional" forms of reasoning that lead to verifiable and valid results.

This study's network explores expressions of beliefs (concepts) taken from authors' passages and quotes in order to provide "conditional" forms of reasoning. In its historical examination, this study does not explore each author's passage, quotes, and individual expressions of beliefs in isolation. Instead, this study explores Bevir's explanation that individual beliefs relate to a "wider web of belief" that are interconnected (p. 29). Owing to Bevir's idea that individual beliefs relate to a "wider web of belief," the thematic network gathers individual beliefs into clusters of concepts in order to identify the web, or network, to which the belief originated.

Once a historian of ideas identifies a web of belief, it might explain how the concepts/beliefs sustain relevance throughout history. Bevir notes, "A web of beliefs resembles a network that maps on to reality at various points, where these points are defined by the way in which the relevant beliefs relate to one another" (p. 191). Bevir notes how these individual but "relevant beliefs" interconnect and "relate" not only to form a coherent whole, but also to "[map] on to reality."

In order to show how "the relevant beliefs" "relate" to the Frankenstein myth, the thematic network's clusters of concepts constitute interconnected ideas (authors' passages and quotes) that "[map] on to reality." These interconnected ideas constitute references to the novel *Frankenstein* but "[map] on to reality" by their association with GMFs and biotechnological uncertainty. These ideas form a coherent web, and their formation of clusters of concepts

establishes an unbiased approach that provides rational forms of explanation in tracing the historical progression of the Frankenstein myth.

4.1.1.2 Skinner's objection to the "History of Ideas" methodology

Like Bevir, Skinner (2002), an intellectual historian, objects to the methodology and has an aim to define an appropriate method for the history of ideas. Skinner has described the ways in which meaning should be recovered from a text and has suggested that historians take a "historically-minded" approach to the study of the history of ideas (pp. 2–3). In Skinner's "historically-minded" approach, the historian avoids acting upon preconceived ideas about a particular historical work's significance and contribution to contemporary issues.

Skinner's argument encouraged full awareness of any preconceived ideas about a historical work's significance and contribution to the thesis' inquiry into Frankenstein's endurance. His ideas also encouraged full awareness of any preconceived ideas about the "unit-ideas," or concepts, located in chosen texts, that might increase the risk of biased interpretation of the thesis' research results.

Skinner's (2002) sharp criticism also targeted Lovejoy's (1933/1965) "unit-ideas" methodology. As mentioned, Lovejoy postulated that the "principle of plenitude" is a "unit idea" that influenced the "orderliness and coherence of reality" in early eighteenth-century thoughts and beliefs (p. 288). The major strength in Lovejoy's "unit-ideas" methodology is that he locates an idea's unique historical development and hypothesizes about the unit within the comprehensive rationale of the ideas' progression through history.

However, Skinner has discussed problems with Lovejoy's "unit-ideas" analytical approach and has noted that the overall methodology exclusively relies upon interpretive analysis:

> First there is the danger of converting some scattered or incidental remarks by a classic theorist into their 'doctrine' on one of the expected themes. This in turn has the effect of generating two particular kinds of historical absurdity. One is more characteristic of intellectual biographies and synoptic histories of thought, in which the focus is on the individual thinkers (or the procession of them). The other is more characteristic of 'history of ideas' in which the focus is on the development of some 'unit idea' itself. (p. 60)

Skinner's objection mostly concerns biased reconstructions of history. He asserts that historians interpret a classic theorist's vague or "incidental remarks" and then incorporate them into their own form. He contends that historians who apply the history of ideas to their study of historical texts risk postulating "historical absurdity" or false interpretations of history.

The extent to which historians postulate false interpretations of history further motivates Skinner to discuss Lovejoy's "unit-ideas" methodology. Skinner has noted, "The danger with this approach [unit-ideas] is that the doctrine to be investigated so readily becomes hypostasised into an entity" (p. 62). His criticism exposes further weaknesses in Lovejoy's "doctrine" or his principles. He claims that Lovejoy's "unit-ideas" or "doctrine," is "hypostasised," meaning that "unit ideas" are assumed by historians to have always been intrinsic and influential principles in history.

Skinner's objection to the methodology led to an awareness of the "danger" of adopting a "unit-idea" that is "hypostasised." If the "unit-idea" were "hypostasised" then it would be inappropriate in recovering the text's true meaning and relevance. Subsequently, the analysis of historical texts would be at risk of being arbitrary and prone to biased interpretation problems, and increase the risk of postulating false interpretations of history.

In light of Skinner's objection, this thesis explores precautionary methods to ensure that the unit-ideas, or concepts, employed are not "hypostasised." The method's precautionary measures involve identifying the unit-ideas, or concepts, from authors' passages and quotes. The authors' passages and quotes anchor the unit-ideas in reality and reflect ideological or thematic interconnections. Therefore, the identified unit-ideas' intrinsic and influential principles discussed in this thesis are not based solely on assumptions, but rather they are mostly based on authors' expressions of these thematically interconnected principles. Thus, by further identification of these authors' expressions, the unit-ideas' (concepts') thematic interconnections are represented through a thematic network. This network offers a *systematic form of reasoning* (as per Bevir, 1999) that justifies the unit-ideas' ideological connections and so control biased interpretations of the research's results.

Even though Skinner does not say outright the extent to which historians can or cannot avoid postulating false interpretations of history, his argument motivated caution in this study's explanation of "incidental remarks" in the construction of the thematic network. For instance, the authors' passages used in this thesis reflect ideological connections to the Frankenstein myth's association with biotechnology and are discussed as the "unit-ideas" or concepts. The method's identification of these authors' ideologically connected passages helped to avoid falling into the trap of presuming that "scattered or incidental remarks" about the Frankenstein myth in one of the source texts represented both the author's doctrine and the belief system of a larger era of thought. In addition, Skinner's discussion led to a consideration that the "unit-idea" method should be located with utmost diligence since it potentially can narrow focus on a principle or concept that might not facilitate the consideration of other possible influences of early nineteenth-century thoughts and beliefs.

Still, in light of Skinner's criticisms, the method does have potential strengths. For example, the method has the potential a) to find the core of complex ideas in the Frankenstein myth; b) to strengthen further an understanding of the core ideas in historical texts; and c) to trace continuities or patterns in core ideas from the novel *Frankenstein* to the use of the term "Frankenstein foods."

Nonetheless, it is prudent to be attentive to Skinner's criticisms of the method's potential for biased interpretations. Yet, it is arguable that bias might not be an evil in and of itself—it is natural and unavoidable in focusing one's research on certain questions and not others. Furthermore, it is prudent to be concerned with a) how bias might obscure data that can disprove favourite theories, or b) when bias might reveal what is not there in a text—forced interpretation; and c) when bias might lead to overconfident general conclusions without sufficient data.

Altogether, with an awareness of these concerns the construction of a thematic network within the history of ideas helped to control the potential for biased interpretation of data and coherently trace the development of the Frankenstein myth in various texts throughout history.

4.1.2 Thematic Network

This study explores Attride-Stirling's (2001) thematic network as an appropriate method for the thesis' inquiry since it fits its aims to explore the Frankenstein myth's message, its meanings, and thematic patterns within various discourse across several epochs. Attride-Stirling proposed that thematic networks are "web-like illustrations (networks) that summarize the main themes constituting a piece of text" (p. 386). The "web-like" illustrations allow the researcher to identify salient themes and their possible thematic connections in a clear and coherent manner.

Attride-Stirling proposed that the method enables a "methodical systematization of textual data" (p. 386). She posits thematic networks as a systematized method in exploring

salient meanings and patterns embedded within various texts. She developed thematic networks because she recognized a gap in proper methods for analyzing qualitative data. According to Attride-Stirling, "thematic networks are a tool in analysis, not the analysis itself; to take the researcher deeper into the meaning of the texts, the themes that emerged now have to be explored, identifying the patterns that underlie them" (p. 393). Thematic networks thus "take the researcher deeper into the meaning of the texts" and not a surface identification of themes.

Attride-Stirling also found a need for more explicit methods of qualitative analysis. She asserts that these explicit methods can be achieved by "recording, systematizing and disclosing our methods of analysis, so that existing techniques may be shared and improved, and new and better tools may be developed" (p. 386). The process of "recording, systematizing and disclosing" the method of analysis exposes the potential strength in the method since researchers can duplicate its results and possibly improve upon the technique for future research.

The "systematization" process motivates consideration in constructing a thematic network. According to Attride-Stirling, the "systematization" of texts involves a) extracting the simple principles or ideas in a text, named "*Basic Themes;*" b) grouping the Basic Themes to condense abstract principles or metaphors found in the text, named "*Organizing Themes*;" and c) condensing further the abstract principles into a whole, named "*Global Themes*" (p. 388). These themes are then constructed as "web-like illustrations (networks)" that show the relationships between them. The categorized "web-like" designs enabled an examination of concepts that connect the themes' relevance from one generation to the next.

The main theme was the Global Theme. According to Attride-Stirling, "Global Themes tell us what the texts as a whole are about within the context of a given analysis" (p. 389). In other words, the Global Theme is the main or overarching principle of the texts. Attride-Stirling

noted the other important themes, such as, the Organizing themes, which are "clusters of signification that summarize the principal assumptions of a group of Basic Themes, so they are more abstract and more revealing of what is going on in the texts" (p. 389). To clarify, the Organizing Themes represent "clusters of signification" that are summarized from grouping the Basic themes. Attride-Stirling noted that "Basic Themes are simple premises characteristic of the data, and on their own they say very little about the text or group of texts as a whole" (p. 389). In general, the "simple premises" typical of the data derive from the meanings of words and phrases in a text. The words and phrases on their own do not contribute much to the overall meaning of the text. Only when the Basic Themes group together through common meaningful connections do they contribute to a broader concept.

The network is appropriate for the research's inquiry into the Frankenstein myth, for it allows for the uprooting of the salient but abstract themes in a text and allows for the organizing of themes in a coherent and methodological structure for analysis. In addition, the construction of a thematic network is beneficial to validate systematically abstract and complex textual data.

This study sets forth a reverse-engineered version of Attride-Stirling's model to accommodate an examination of the trajectory of original themes that arose from the novel's conception and find relevance in modern discourse on biotechnology.

Attride-Stirling's model functions to depict an encapsulation of abstract ideas from varied sources. Attride-Stirling's model had to be modified in order to work in the opposite direction: to depict an expansive network of abstract ideas derived from a single source (the novel *Frankenstein*). In Attride-Stirling's model, the thematic network begins with identifying the Basic Themes and then compressing these themes into the Global Theme. In her model, she

extracts the simple premises and then groups them to condense these principles into Organising themes and subsequently the Global Theme.

However, in the thesis' modified network model, the thematic network begins with identifying the Global Themes and then extending outwards to the Basic Themes. In particular, the thesis' modified thematic network first identified and used the novel's life within death paradox as the core theme (the source). The modified network became necessary to show how the paradox has expanded and created branches of subsequent themes about life and death and philosophical and ideological concerns about emerging technologies across several epochs.

4.2 The Method

This section narrates the explanation of the research process. The section starts with an exploration of paradigm assumptions, then the selection and analysis of texts, the narrative methods, and then ends in a discussion of the thesis' validation methods.

4.2.1 Paradigm assumptions

Paradigm assumptions affect how the conception of a "history of ideas" can answer the thesis' research question about the endurance or the existence of the Frankenstein myth. The theorists Barthes (1972), Ferrell (2000), and Saussure (1916/1972), mentioned in the theory chapter, were key in strengthening the fundamental research assumption (theory) that myths, such as the Frankenstein Myth, do exist in social reality and communication. In addition, the theorists were relevant in strengthening the research assumption that methodologically, myths can be studied using semiotic theory. Hence, the epistemological approach was constructivist. The constructivist epistemology holds that there is no objective truth to reality since all knowledge and meaning are human constructs. According to theorist Crotty (1998) who outlines the various methods, methodologies, theoretical perspectives, and epistemologies,

> There is no objective truth waiting for us to discover it. Truth, or meaning, comes into existence in and out of our engagement with the realities in our world. There is no meaning without a mind. Meaning is not discovered, but constructed. In this understanding of knowledge, it is clear that different people may construct meaning in different ways, even in relation to the same phenomenon. (pp. 8–9)

In the constructivist view, social reality is "constructed" and all meanings and objects come into existence due to experience. The constructivist epistemological view is consistent with the thesis' inquiry into the Frankenstein myth's nature to "construct" realities and connect the abstract to the material. Theorist Ferrell's (2000) discussion of myth was a relevant factor in strengthening assumptions about the relationship between abstractions and the material. Given Ferrell's discussion about myth's "specific relationship" to "reality," it complimented the constructivist approach adopted in this thesis that explains myth's "constructed" realities between the material and the abstract.

Furthermore, the theorists Barthes focuses on the idea that "myth is a communication system," which is relevant to the thesis' study to illustrate that the Frankenstein myth is a "communication system" and a social construction constituting *concepts* (according to Barthes, 1972) that operate to distort social reality. In addition to distorting social reality as well as connecting the abstract with social reality, the methodological approach helped to identify the concepts that form the core ideas (or *unit-ideas* according to Lovejoy 1933/1965) within various texts. In essence, both Barthes' theory of concepts and Lovejoy's postulation of unit-ideas helped to explain the foundational structure that connects abstractions (the Frankenstein myth) to social reality (GMFs).

Like Barthes, Saussure's (1916/1972) ideas involve an inquiry into the nature of myth's function and its connection between the abstract and social reality. Given Saussure's discussion on how abstract signs are ultimately based on "concrete entities," it helped to illustrate how the Frankenstein myth found social relevance within contemporary critical discourse.

4.2.1.1 Databases

Online articles, magazines, and newspapers dated from 1800 to 1950 were retrieved from the following databases: 1) *ProQuest Historical Newspapers: New York Times; The Globe* (1844-2010); *Wall Street Journal; Washington Post*; 2) *The Times Digital Archive*.

The following is a complete list of all chosen databases in alphabetical order from which online journals and articles returned results from the abovementioned search words: Ebrary; EBSCO; Factiva; JSTOR Journals; ProQuest; Sage Journals Online (by Sage Publication); and ScienceDirect.

Finally, all books were retrieved from the University of Calgary library.

4.2.1.2 Search terms and databases

The selection of texts was carried out by typing in the following search words and sifting through the results, as follows:

a) *Frankenstein and endurance*—this search returned approximately 9,200 results from books and ebooks and approximately 900 online articles and journals. A refined search for scholarly sources returned approximately 580 results. The number one result for consideration was Levine and Knoepflmacher's (1979) book *The Endurance of Frankenstein: Essays on Mary Shelley's Novel*. The majority of books considered in this search were mostly intrinsic studies of the novel. They offer a complete history of the myth from philosophical, psychoanalytical, and cultural perspectives;

b) *Frankenstein and GMFs*—this search returned approximately 90 results from books and ebooks. A refined search for scholarly sources returned approximately 7 results. The number one result for consideration was Laros and Steenkamp's (2004) article[2] "Importance of fear in the case of genetically modified food." The articles found in this search category mostly deal with consumer fear of genetically modified foods, the controversy over biotechnology, and the ethical issues surrounding biotechnological processes and development;

c) *Frankenstein foods*—this search returned approximately 25,000 results from books and ebooks and approximately 3,100 scholarly and peer reviewed articles. Articles of interest tackle environmental, social, and health concerns about GMFs. These articles show the metaphor's pliability, and as such show its ability to sustain relevance within modern discourse. For example, researcher Kim Hammond's (2004) "Monsters of modernity: Frankenstein and modern environmentalism"[3] explores the Frankenstein metaphor in terms of biotechnology's consequence to the environment;

d) *Frankenfoods*—this search returned over 3,000 results from newspaper articles, approximately 580 results from books and ebooks, and 570 scholarly and peer reviewed articles. Similar to the "Frankenstein foods" search and previous search terms, the articles found in this search category reflect society's fear of genetically modified foods and their consequence to health and the environment;

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[2] See Laros', F. J. & Steenkamp's, J. E. (2004) broad application of the metaphor, testing its relevance or resonance by conducting statistical analysis of how mass media use certain types of language to communicate and embed fear within the psycho social consciousness.

[3] See Hammond's, K. (2004) psychoanalytic view of the role of the media in the perpetuation of fear of biotech institutions.

e) *Frankenstein and biotechnology*—this search returned approximately 1,000 results from scholarly and peer reviewed articles. One of the articles considered was van der Laan's (2010) "Frankenstein as science fiction and fact." This article was from the journal *Bulletin of Science, Technology and Society*. The van der Laan article and others in this search category are of interest, for they investigate how the media move back and forth between the lines of fiction and fact in modern discourse about biotechnology;

f) *Early receptions of Frankenstein*—this search returned approximately 17,600 results from books and ebooks. The number one result for consideration was Timothy Morton's (2002) book *A Routledge literary sourcebook on Mary Shelley's Frankenstein*. The study explored approximately 1,600 results from scholarly and peer reviewed articles in this search category. The articles of interest reflect references to the Frankenstein monster's creation and provide early images and themes from the novel's conception to modern discourse;

g) *Frankenstein in popular culture*—this search returned approximately 22,400 results from books and ebooks. The number one result for consideration was Fred Botting's (1995) *Frankenstein: Mary Shelley*. The study explored approximately 4,900 results from scholarly and peer reviewed articles in this search category. The articles of interest examine discourse that reference *Frankenstein* as a symbolic representation of technological advancements that have a dire impact on humanity's future.

Within these search results, this study explored relevant data as either texts that included these search words (A–G), or the word "Frankenstein," and/or phrases that included the words "Frankenstein." In the majority of cases, these selected texts constituted the search words and phrases only in the context of discussions about GMFs and biotechnology. For example, Sharma

Anjana's (2004) book[4] *Frankenstein: interrogating gender, culture, and identity* was not considered, for the author compiled essays that focus on gender and matters of politics that construct cultural identity. Such issues go outside the thesis' focus of tracking the origins of the Frankenstein myth's association with technological uncertainty.

These search words and phrases, such as "Frankenstein foods," or "Frankenstein and endurance" could a) be in the title of the article; b) be in the article's main body; or c) be in both the title and the main body. In the case of the search phrase "Frankenstein foods," which returned approximately 3,000 peer reviewed articles, the selected articles did not merely use the words and phrase in the texts but rather used them to form a central argument. For example, Henk van den Belt's (2009) article[5] "Playing God in Frankenstein's footsteps: Synthetic biology and the meaning of life" associates the phrase "Frankenstein foods" with synthetic biology in order to form a central argument about the moral consequences of biotechnology.

In some cases, the selected articles did not have a scientific-themed base. For example, this study explored Chris Baldick (1987) "In Frankenstein's shadow: myth, monstrosity, and nineteenth century writing," for the author examines the early history of the Frankenstein myth and its various meanings from the novel's conception to modern discourse. Baldick's article did not form the thesis' core analysis. Nonetheless, the thesis explored his article and others similar to his, for they offer both historical and diverse perspectives of the myth. These perspectives

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[4] See Sharma's, A. (Ed.). (2004) compilation of various essays that show how Mary Shelley uses metaphor to distort cultural norms.

[5] See Belt's, van den, H. (2009) article that concerns the ethics and morals about synthetic biology; he discusses the social consequences of creating synthetic organisms and their impact on the future of humanity.

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were important to analyze since they represent various appropriations of the Frankenstein myth and its themes and meanings in discourse.

4.2.1.3 Issues of bias in text selection

The issue of biased interpretation was addressed by systematically selecting texts that not only fit the thesis' search criteria but also addressed the overall research question. The selection of texts was influenced by previous knowledge and reading of the *Frankenstein* novel, exposure to critical discourse citing the novel and the endurance of the Frankenstein myth, and the study of communication theories prior to constructing the research questions.

However, Skinner's recommendation was adopted in order to take a "historically-minded" approach. Such an approach ensured that the selection of texts significantly reduced the risk of producing false interpretations of historical ideas.

4.2.1.4 Selection of Texts

The criteria for the selection of texts comprised of finding materials that covered a period that spanned approximately from pre 1818 to 2015. The period was important in order to build a thematic network (mythological system) within a history of ideas that covered the era of *Frankenstein's* origins in 1818 and contemporary debates about Frankenstein foods in 2015. The thesis' analysis and discussion ultimately ties to the novel, as opposed to the various interpretations of it. This strategy stems from the idea that the novel is arguably the source of all themes and ideologies present in modern discourse about biotechnology. Over the course of the novel's transit across time, the various interpretations arguably have proven to be more popular than the novel itself. However, the thesis' thematic network does not highlight influential interpretations of the novel. Instead, the thesis' network highlights the origins of the various influential themes and ideologies that are present in modern discourse about biotechnology. For

example, this study mainly explores the Frankenstein myth's ideological and thematic connection with the use of the term "Frankenstein foods." The term is commonly used in debates about the dangers of GMFs, and as such, the thematic network highlights any thematic patterns or ideological connections to the use of the term. Hence, the selected texts needed to contain passages that reveal ideological and thematic connections that are traceable from the novel's origins to modern discourse about biotechnology. In order to obtain the appropriate passages for analysis, these texts needed to be works that

a) Reflected the novel's early interpretations about the Frankenstein monster's creation as a critical moment in the novel, and/or
b) Made reference to the novel in scientific exploration of artificial food processes, and/or
c) Made reference to the novel in discussion of issues about life and death and the underlying forces that animate life, and/or
d) Reflected allusions to the novel in debates about biotechnology, specifically, GMFs, and/or
e) Made reference to the novel in issues about social disorder.

The present study used a "history of ideas" framework in order to examine the question of "endurance" of the Frankenstein myth. The method for selecting these texts was based on the assumption that myths such as the Frankenstein myth are a part of social reality. As a result, the selection of texts was influenced by the assumption that the Frankenstein myth is a social construction possessing an adhesive quality that connects to social reality. In addition, the selected texts contain passages that exemplify the novel's core themes and ideologies that have proven to possess contemporary relevance and have endured from early nineteenth century to the

twenty-first century. Overall, these selected texts offer clues to the novel's core themes and its evolution through society's mutable fundamental cultural assumptions prevalent within early and modern discourse.

No doubt, over this expansive period, various scholars have explored a plethora of themes that have arisen from the novel. For example, there are works that devote their analysis to the novel's roots within the Romantic and Victorian periods that perpetuate psychological ills and society's obsession with technology.[6] Others texts explore varied concepts of the Frankenstein monstrosity—examining the creature's birth to its physical appearance in cinematic representations.[7] Other texts explore gender and feminist issues with topics that range from Gothic, to lesbianism, and venture beyond the literary discipline to situate the novel as metaphor within cultural contexts.[8]

To emphasize, an exploration of these various texts and interpretations is beyond the scope of this study. Even so, an inquiry into the origins of the Frankenstein myth is necessary, for it is arguable that the myth might have gained its original *form* (according to Barthes, 1972) prior to and through the novel *Frankenstein*. However, it is also arguable that eventually the myth transcended the original novel, time, and specific authors and genres. Given that the Frankenstein myth transcended the original novel and endured, the chosen methodological approach is justified and feasible, for the thesis' inquiry into the Frankenstein myth involves exploring the myth's ideological connection to biotechnological uncertainty and the term

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[6] See Reichardt, J. (1994).
[7] See Bann, S. (1994).
[8] See Wilt, J. (1979); Johnson, B. (1987); Vine, S. (1996).

"Frankenstein foods." This form of inquiry should and can be studied through the analysis of texts that are spread across time, authors and genres.

The selection of artifacts was a look backwards through periods of the history of ideas in order to explain how the Frankenstein myth transcends time, authors, and genres. The data sets for the main analysis were from online newspapers, journals, magazines, and books from approximately 1814–2015. These materials a) include scientific debates from scientific-themed online magazines and newspapers; b) include literary responses (online and print) to the novel; and c) include scholarly journals and books. Online magazines and newspapers were selected. Print magazines and newspapers were not selected for convenience and the ability to search vast amounts of information within less time.

In order to examine *Frankenstein* in the scope of a history of ideas, texts were examined that would provide materials prior to the novel's conception, and materials on the novel's early interpretations, especially, from the late eighteenth century to the twenty-first century. The aim was to find materials that would allow the identification of influences in the novel's conception and then the identification of the novel's core themes and how these themes form patterns and advance in new forms across several historical eras.

In addition, it was essential to search for articles or books that situated the novel within prevailing social issues in the early nineteenth century. Hence, Morton's (2002) book *A Routledge literary sourcebook on Mary Shelley's Frankenstein* was an appropriate selection. In particular, Morton situated the novel in the period (early nineteenth century) when the debates about life and death were at the forefront in the social consciousness. The book is an anthology that examines *Frankenstein* in literary and cultural contexts. The book was useful to the thesis' study of the history of ideas, for the book summarizes extracts of articles taken from the novel's

early interpretations from its inception. These articles were reprinted and shown in sections or chapters within the book. From this resource, it became necessary to search for articles on the scientific debates and the theories prior to the novel's conception about what animates and constitutes life. The search led to an inspection of materials that would help locate social and scientific influences that contributed to the novel's ideas and themes about life and death. Specifically, the articles Abernethy (1814), *Royal College of Surgeons*; Lawrence (1816), *Royal College of Surgeons* were selected. These articles mostly outline the sociocultural climate in the period prior to *Frankenstein's* conception and provided information about the scientific debates between the vitalists and materialists about what constitutes life and what animates life. The selected articles by Percy Bysshe Shelley (1818/2002) and Walter Scott (1818/2002) in the *Edinburgh Magazine* represent few of the first literary interpretations of the novel.

The novel's various interpretations could offer ideas about how *Frankenstein* endured. As a result, it was important to look for material that would help explain how the novel's themes developed in the late twentieth century. In general, these materials would help to compare and contrast shifts in representations of the novel's core themes from the late nineteenth century to the late twentieth century. In addition, this study explored materials to explain new forms of patterns in representations of the novel's core themes in the advent of technological advances and cultural shifts. Specifically, Levine and Knoepflmacher's (1979) book *The Endurance of Frankenstein: Essays on Mary Shelley's Novel* was an appropriate selection. Levine and Knoepflmacher's book offers ideas on what elements contributed to the novel's endurance and cultural relevance in social and scientific discourse. The edited book contains various interpretations of the novel from the authors Levine (1979), Griffin (1979) and Sterrenburg (1979). These contributors to the book focused on the intrinsic features of *Frankenstein* and

emphasized themes that connect *Frankenstein* to technological uncertainty. The key features of the book are the authors' reflections upon emerging technologies and disruptions of cultural assumptions of life and death by the novel's creation of the monster.

The book highlights the creation of the monster to be one of the most pervasive and prominent themes within the novel.

In order to examine how prominent themes within the novel were used in critical discourse, it was necessary to look for articles that alluded to *Frankenstein* in discussions about social issues from the late nineteenth century to the late twentieth century. In general, this study explored articles to explain how the novel transcends genres. In addition, the study explored articles that would help to identify new forms of patterns in representations of the novel's core themes in discourse about social issues. Specifically, the selected articles gave evidence of the use of the novel's themes to represent disruptions in social structures (*New York Times*, 1857; *Globe*, 1896). These articles were not central to the analysis but were considered for the analysis chapter in order to show the variations in the use of the novel's themes in discourse. The *New York Times* (1924) *The Times* (1926), Savage (1929) from *The North American Review*; and Thomas (1933) from *The Journal of the Franklin Institute* were selected in order to account for the novel's varied thematic representations. These selected articles and journals referenced *Frankenstein* in relation to social constructs. They could be helpful to compare and contrast how these references to *Frankenstein* were used to discuss social issues (social disruption) from early to late twentieth century.

In order to examine how *Frankenstein* was used to discuss social issues, especially focussing on modern debates about biotechnology, it was important to search for texts that would provide material on the use of the term "Frankenstein foods." The aim was to find material that

would help to connect the novel's core (original) themes with the use of the term "Frankenstein foods" in debates about biotechnology and GMFs. The material would help to compare and contrast the extent to which the novel's core (original) ideas and themes interconnect with modern ideas about the emerging technology. In addition, the study explored articles that helped situate the novel in the period when the debates about GM technology were at the forefront in the social consciousness. Hence, the following selected articles helped in the examination of the use of the term "Frankenstein foods" within contemporary critical discourse (Klee, 1999; Gerstel, 2002; Ashbridge, 2010, in *Crops*; Gillespie, 2013, in *The Sunday Times*; and Bowern, 2015, in *Western Morning News*). These selected articles use the term "Frankenstein foods" to represent the uncertainty about the emerging technology GMFs.

4.2.2 Analysis of themes from texts

After the collection of data, the next step was to analyze it. It was important to select quotes and passages from texts that were most representative of core concepts that function to be the foundation of a history of ideas. The quotes and passages were analyzed by using the theories of semiotics posited by Barthes (1972) and Saussure (1916/1972) and theories of myth posited by Ferrell (2000). The analysis of texts was critical in discovering the trajectory of meanings and their connections in the use of the novel's ideas and themes from the early nineteenth century to the early twenty first century. These connections in the novel's ideas and themes helped to uncover concepts that formed the Frankenstein myth and contributed to its endurance and relevance within contemporary critical discourse.

The aim was to construct a thematic network in order to examine the thematic history and endurance of Frankenstein myth. Since the thesis' inquiry into Frankenstein myth's endurance explored mythical levels of meaning, the thematic network became a *mythological*

system. The construction of the mythological system occurred in two phases. In phase one, the Global themes were identified. These themes simultaneously formed the Frankenstein Myth, and the overarching theme, the "Frankenstein Paradox." In phase two, the Organizing and Basic Themes were identified. These themes were clustered together to form subordinate themes to the Frankenstein Paradox, such as the "Frankenstein Monster," "Frankenstein Foods" and "GMFs." These themes helped to anchor the *concepts* (according to Barthes, 1972) within social reality and helped to sustain the Frankenstein Myth and its interconnections with other themes within the system. In the mythological system, *mythical themes* refer to all the themes (Global, Organizing and Basic).

4.2.2.1 Analysis of themes from texts: phase one

The construction of the mythological system began with examining works that might have simultaneously influenced the conception of the novel *Frankenstein* and the Frankenstein myth. As a result, the construction of the mythological system began with analyzing texts prior to the conception of the novel. In effect, it became necessary to explore scholars' discussions and to seek interconnected themes that influenced the *concepts*, which according to Barthes, are susceptible to be appropriated into numerous interpretations using irregular associations. These concepts and their representative themes were grouped together to form clusters that helped to sustain the Frankenstein Myth and the creation of subsequent mythical themes, such as the Frankenstein Paradox, the Frankenstein Monster, Frankenstein Foods, and GMFs. The appropriate themes have been found when the concepts represent one or more of the following:

A. Disruption or perversion of the social and natural order.

B. Unnaturalness (technology).

C. Fusion of fact and fiction.

D. Fusion of the natural and the unnatural (human and technology).

E. Distortions of scientific inquiry into life and death.

F. Creation turned against Creator

For example, the cluster of concepts that formed the Frankenstein Myth were derived a) from surveying approximately 600 scholarly articles in order to locate and group ideas from Abernethy (1814) with Lawrence (1816); b) from examining scientific inquiry into life and death in the period prior to the novel; and c) from examining Mary Shelley's novel—the creation of the monster. Specifically, both Abernethy's and Lawrence's quotes provided the concepts that represented the novel's distortion of scientific inquiry into life and death. Hence, the theme of life and death became the core of the *mythological system* (thematic network). Given Barthes' theory of myth illustrates that myths are an "abnormal regression" from *meaning* to *form*, the theory helped to show that the Frankenstein myth was an "abnormal regression" from meaning to form. From Barthes's theoretical perspective of myth, the Frankenstein myth is a concept that is predisposed to be appropriated or distorted into various interpretations using irregular associations.

In particular, the mythological system highlighted these irregular associations and the clusters of concepts that might have influenced the creation of the Frankenstein Myth and the Frankenstein Paradox. For example, Abernethy's (1814) quote provided the concepts about the "knowledge of dead and living matter" (p. 19). In the period prior to the novel's conception, scientists contemplated what animated "living matter." Similarly, Lawrence's (1816) discussion provided the concepts about the distinction between life and death: "Organization means the peculiar composition, which distinguishes living bodies; in this point of view they are contrasted with inorganic, inert, or dead bodies" (p. 21). These concepts by both Abernethy (1814) and

Lawrence (1816) were grouped together and helped to show an underlying pattern of inquiry into the contrast between "living bodies" and the "inorganic."

In particular, the ideas about life and death by Abernethy and Lawrence were connected with Mary Shelley's (1818) creation of the monster. Frankenstein narrates it thus: "I collected the instruments of life around me that I might infuse a spark of being into the lifeless thing that lay at my feet" (Shelley, 1818, p. 58). The creation of the monster reflected distorted concepts about the contrast between life and death. The concept of infusing "a spark of being into the lifeless thing" was revealed as a distorted concept about the distinct boundaries between life and death. Simultaneously, these distorted concepts about life and death were also used in the mythological system to form the first connection to the Frankenstein Myth, that is, the Frankenstein Paradox.

Altogether, the novel's early interpretations and Barthes' ideas of myth helped to discern how these distorted concepts about life and death contributed to the birth of the Frankenstein Myth and the Frankenstein Paradox—the creation of the monster (a paradox—a distorted concept that blurs preconceived boundaries between life and death).

4.2.2.2 Analysis of themes from texts: phase two

In phase two, the mythical themes the "Frankenstein Monster," "Frankenstein Foods," and "GMFs" were identified. These mythical themes connect to the Frankenstein Myth and the Frankenstein Paradox. In essence, these mythical themes were identified by continuously uncovering and grouping diverse *concepts* (as per Barthes, 1972) that sustained the Frankenstein Myth and the Frankenstein Paradox. Words and phrases (simple premises) were not used solely on their own since they do not provide significant contribution to the overall meaning of the text. Instead, the concepts were grouped together through the identification of common meaningful

thematic connections, namely, themes A to F, which provided a broader conceptual meaning of the text.

For example, the various authors (such as Scott, 1818/2002; Bysshe Shelley, 1818/2002; Garvan, 1924; Thomas, 1933; Sterrenburg, 1979) provided the concepts that a) represented disruption or perversion of the natural order; and b) represented creation turned against creator (scientific or social). These authors also provided the concepts from the first interpretations and receptions of the novel and were grouped within a particular cluster of concepts according to their mutual thematic relationship to reality. Given Ferrell's (2000) ideas that myths form "a specific relationship to a reality," it was within reason to show how the ideas about life and death within the novel (abstractions) connect to social reality. From Ferrell's ideas on myth's unifying quality, the novel's abstract and distorted concept about life and death connected to concepts by Scott and Bysshe Shelley. For example, Bysshe Shelley (1818/2002) referred to the monster to be an "abortion" (p. 44). This term is Bysshe Shelley's concept of the Frankenstein monster that forms a "specific relationship to a reality" and connects the abstract (the monster) to social reality (abortion).

Similarly, other concepts were grouped together in particular clusters and their "specific relationship to a reality" were highlighted in the construction of the mythical themes, "Frankenstein Foods" and "GMFs" within the mythological system.

4.2.3 Narrative Methods

The overall method is a history of ideas within a *mythological system*. The aim was to handle objections to the method by constructing a verifiable system applying "conditional" forms of reasoning discussed by Bevir (1999, p. 11). The "conditional" forms of reasoning were to reduce the risk of biased interpretation of results. For example, the mythological system's *web-*

like design (as per Bevir, 1999 and Attride-Stirling, 2001) allowed the facilitation of "conditional" explanations and interconnectivity of *concepts*, especially, the system enabled the elucidation of both the rationale for their selection and their interrelationship with other concepts within the mythological system. In doing so, the selection of concepts was justified through their interconnections with other concepts from other texts.

In justifying my selection of concepts through their interconnections with other texts, Skinner's (2002) recommendation was followed in order to adopt a "historically-minded" approach, which helped to reduce the risk of biased interpretation (pp. 2–3). For example, the mythical themes were arranged in the web-like design to show reasonably the development of clusters of concepts, especially, their connections and interconnections (conceptual) with other texts and their clusters of concepts across several eras. In doing so, the chosen web-like design does not merely reflect a linear history, as if there is only one chain, but reflect a network/web of interconnected ideas. The web-like design provided a coherent and systematic network to show reasonably the connections from past clusters of concepts to present clusters of concepts and their interrelationship.

In order to show the concepts' interrelationship, it was necessary to arrange the clusters of concepts around each mythical theme, and as such, the mythological system was useful in that it helped to reveal the varied interconnections that arose from the Frankenstein myth.

The mythological system is an illustration of all the mythical connections (conceptual) with the Frankenstein Myth from pre-1818 to 2015. The clusters were determined by locating similar concepts that connected to the Frankenstein Myth across time. For example, the study explored periods that reflected an abundance of concepts about the Frankenstein Monster and its creation.

Likewise, in other periods, an abundance of concepts connects to "Frankenstein foods." In constructing the various clusters, it was important to analyse these concepts while simultaneously making connections to the mythical themes across other eras.

However, the chosen data analysis did not yield a large enough number of concepts in the mythological system to account for the clusters or the mythical themes. In constructing these clusters of concepts within the mythological system, the clusters lacked time-connecting data and contained various historical gaps within the concepts and their narrative's time-line.

In some cases, the present study did not sufficiently explain these historical gaps. The historical gaps reflect the lack of sufficient relevant data that fit the thesis' criteria and the overall inquiry into the Frankenstein myth. In addition, the historical gaps (especially between the mid nineteenth century and the start of the twentieth century) reflected a low period in society's interest in the novel. This also might explain why there were little to no references to the novel made in those periods.

However, these historical gaps were compensated for by carefully selecting texts that were fully representative of all the appropriate references to the novel *Frankenstein* and the Frankenstein myth. Ultimately, these references reflect in the overall clusters of concepts within the mythological system. Hence, a thorough search was performed though the databases to ensure that the mythical themes postulated in the mythological system were derived from mutual concepts that thematically and ideologically connected to the Frankenstein Myth in both the early and present discourse. Specifically, in order to compensate for the historical gaps within the mythological system, author's passages and quotes, and their meanings were grouped together to ensure the credible formation of the mythical themes, or clusters of similar concepts. For example, Bysshe Shelley (1818/2002) mentioned "malevolence and selfishness" in his reference

to the Frankenstein monster (pp. 43-44). He used these words to account for the monster's existence as a social disruption due to society's ills. Bysshe Shelley's comments were categorized under the cluster of concepts that was representative of disruptions in social structures and the natural order. Within this cluster, the quote by the *New York Times* (1857) "There is a Monster in Wall Street," was included since the article referenced the Frankenstein Monster to highlight the disorder in the financial markets (p. 4).

Other examples include Bowern's (2015) use of the phrase "dangerous stuff," which refers to the uncertainty towards GM foods and its dire consequences to humans (para. 3). Bowern's phrase was grouped with similar phrases and passages, and categorized under another cluster of concepts that represent biotechnological uncertainty and society's perception of GM foods.

In order to explain how the mythical themes were associated with biotechnological uncertainty and were sustained across several eras, Saussure's (1916/1972) theory on the "invariability" of signs helped to reveal how the mythical themes resist change due to an "inheritance from the past" (p. 71). Likewise, Saussure's theory on "variability," which "allows linguistic signs to be changed with some rapidity," helped to reveal how the mythical themes have a propensity for change in order to fit varied social contexts (p. 74). Altogether, when using a Saussurean perspective, it is reasonable to assume that the Frankenstein Myth might have adapted to technological changes over time due to a) their propensity for change and b) their resistance to change. In addition, when using the Saussurean perspective, both *variability* and *invariability* work in tandem (a balance) to realise the myth's and mythical themes' successful and enduring transport across eras.

Creating a figure with arrows showing relationships and directions of connections was a final part of the research process, and is shown in the conclusion of this thesis. The clusters of concepts formed the Frankenstein Myth and then the Frankenstein Paradox and then subsequent mythical themes in the mythological system.

4.2.4 Validation

The history of ideas methodology was used to gain insights into the endurance of the Frankenstein myth (an abstract idea) that managed to secure relevance within contemporary critical discourse (social reality). The major strength in the mythological system is that it enabled an examination of *concepts,* according to Barthes' theory, within a coherent framework that connects the abstract to social reality. In addition, the mythological system provided a means of illustrating both implicit and explicit concepts across eras and their connections through the system's *web-like* design (attributed to Bevir, 1999 and Attride-Stirling, 2001). The design allowed an exploration and collection of a wide range of possible concepts to gain insight into their various patterns of meaning embedded within a text or a group of texts.

The uprooting of the various patterns of meaning within texts that span across time revealed historical gaps in the design of the mythological system. Most of these gaps were addressed and so it became possible to construct a coherent system. However, these historical gaps reveal chronological weaknesses in the mythological system and limit the strength and scope of the thesis' claims or conclusions. Still, it is hoped that the network provides the building blocks for further inquiry into the endurance of the Frankenstein myth.

Chapter Five: Analysis

5.1 Overview

This chapter proposes a history of the development and endurance of the Frankenstein myth by focusing on a particular historical trajectory that led to the myth's association with biotechnology and the term "Frankenstein foods" in modern discourse. The chapter begins with an examination of the Prometheus myth, and then examines how selected articles and journals contributed to the *Frankenstein* novel's successful lift from fiction to become the Frankenstein myth. The chapter tracks how the myth was used over time to convey several interrelated themes and the central thematic paradox of *life-within-death*, and thus eventually contributed to the media's use of the term "Frankenstein foods" in more recent scientific critical discourse.

The mythological network of coherent meaning presented here is not an objective truth. It is a theoretical proposition grounded in a plausible, well-argued history of ideas using a rigorous research and analysis process. Many of the claims of historical coherence and connections will be interpretive rather than explicitly proven by the limited data.

First, a discussion of Frankenstein's original era of conception shows how ancient Greek mythology and scientific experiments in the eighteen hundreds might have influenced Mary Shelley's creation of the novel. In addition to citing sources discussing the Prometheus myth, the chapter involves an analysis of themes from several publications of the era.

The chapter then turns to an examination of the use of variations of the concept of the "Frankenstein Monster" in the period's discourse about social structures. Scott's (1818/2002) and Bysshe Shelley's (1818/2002) insights into the creation of the monster are examined first as literary interpretations of the novel.

Next, the chapter includes a focused analysis of two nineteenth-century articles in the *New York Times* (1857) and the *Globe* (1876). The monster's varied thematic representations are noted in twentieth-century articles (Garvan, 1924, *New York Times*; *The Times*, 1926; Savage, 1929, *The North American Review*; Thomas, 1933, *The Journal of the Franklin Institute*).

Finally, it presents an examination of the varied literary interpretations of the monster by various authors in the book *The Endurance of Frankenstein* (Sterrenburg, 1979; Griffin, 1979).

The chapter provides considerable discussion on the use of the term "Frankenstein foods" in articles by Klee (1999) and Gerstel (2002) that focused on society's uncertainty about biotechnology and GMFs.

Themes such as the changing social attitudes about biotechnology and the tension between emerging technology and society are reflected and highly represented in three artifacts from newspapers, Ashbridge (2010), Gillespie (2013), and Bowern (2015).

5.2 Before Frankenstein: The ghost of Prometheus

Frankenstein's power as myth stems from its symbolic connection to Greek mythology. The full title of Shelley's novel, *Frankenstein; or, the Modern Prometheus* (some later editions dropped the subtitle) alludes to the ancient Greek myth best articulated in the poem *Theogony* (c. 700 BC) by Hesiod. Specifically, the novel alludes to a story about the Titan Prometheus and his punishment for granting humanity a secret of nature, fire. According to the Greek mythology, Prometheus tricked Zeus, and Zeus kept fire from man as punishment for Prometheus' trickery. Prometheus then stole the fire from Zeus and gave it to man. In anger, Zeus condemned Prometheus, chained him to a rock, and sent an eagle to eat his liver. Prometheus' liver would regrow and the eagle would return each day to eat it.

Researcher and Engineer Schillinger (1984) has traced the story of Prometheus' punishment through history, discussing its use in the symbolic expression of technological uncertainty in literature over the centuries. Schillinger discusses the relevance of the story of Prometheus as a moral precedent for the ethical challenges facing macro-engineers in the modern technological environment. As a professor of Management and executive director of the American Society for Macro-Engineering, Schillinger's history considers the consequences of "systems of production as human progress" since he believes these systems are "the primary means of improving the human condition" (p. 59). He reasons that in "improving the human condition," these "systems of production" (technology) have been responsible for social problems because these systems have become "econometric and are no longer ecological" (p. 59). Drawing a parallel between these economic and technological themes and the Prometheus myth, Schillinger (1984) has noted the unforeseen consequences of Prometheus' actions of giving technology to man: "In giving fire to man, Prometheus, who had foresight, did not foresee adequately the unintended consequences which followed tragically from his gift" (p. 62). According to Schillinger, both myths of Prometheus and Frankenstein show that the heroes do not foresee the "unintended consequences" of their actions. In particular, Frankenstein manipulated nature, gave life to a dead being, and suffered the "consequences" when the being turned against him. The "unintended consequences" that resulted from Prometheus' gift to humanity was his eternal torment, a fearful fate that might have contributed to the rise of the myth of Prometheus.

Reflecting on Schillinger's article, one may reason that the endurance of the Prometheus myth might have proceeded from fire's impact on humanity's powers not only to build but also

to destroy. Similarly, the endurance of the Frankenstein myth might also have proceeded from emerging technologies' impact on society's powers to manipulate nature for good or ill.

5.2.1 Before Frankenstein: Giving life to the dead

In the late eighteenth century to the early nineteenth century, scientists performed experiments that sought connections between life and death, or the organic and the inorganic. These experiments influenced Shelley's creation of *Frankenstein* (as claimed by Montillo, 2013 and others). While other social forces influenced Shelley's novel, for example, the French Revolution (an influence attributed by Sterrenburg, 1979 and others), these scientific experiments not only parallel Frankenstein's experiments, but also they might be the core idea of the Frankenstein myth: the paradox of life in death. The following themes (1-3) in the discourse anchored the authors' *concepts* (according to Barthes, 1972) within social reality. In addition, these themes helped to form and sustain the Frankenstein Myth and the Frankenstein Paradox:

1) Distortions of scientific inquiry into life and death.
2) Fusion of the natural and the unnatural (human and technology).
3) Disruption or perversion of the natural order.

In this era, the theory of vitalism exemplified these three themes. The theory posited that organic and inorganic entities were different due to an external non-physical force present in organic entities. Vitalists were interested in identifying that external force or non-physical force that animated beings. According to philosophers Bechtel and Richardson (2005), "Vitalism holds that living entities contain some fluid, or a distinctive 'spirit'… the vital spirit becomes a substance infusing bodies and giving life to them" (p. 1051). The vitalists believed that external forces, such as electricity, were the "vital spirit" that animates life.

In the late 1700s to the early 1800s, Luigi Galvani (1737-1798), a "vitalist" physiologist and obstetrician in Bologna, ran experiments on dead frogs and other small animals by transmitting electricity though their dead bodies (Parent, 2004). The aim of the experiments was to cause movements, or reanimate the bodies. In 1803, Galvani's nephew, Giovanni Aldini (1762-1834) took Galvani's experiments a step further and experimented on a human corpse. According to Parent (2004), "Aldini used bimetallic electricity to shock and convulse the corpse of George Foster, a 26-year-old criminal" (p. 638). These types of "shock" experiments were to test the presence of a "vital spirit" that animated organisms. Aldini's experiment on the dead body made a lasting impression on the public: "Aldini mentioned that the whole body convulsed… 'the left eye actually opened'…and the movements were 'so much increased as almost to give an appearance of reanimation.'" (p. 638). The "appearance of reanimation" became the highlight of the experiment and was reported in the newspapers. Parent has suggested that the "appearance of reanimation" made an "enduring impression on the mind of scientists and ordinary people alike; many began to believe that electricity might be the long sought vital force" (p. 638). To witness the event might have lifted hopes in "electricity" being the "vital force" that would unlock the mysteries of life and death.

In effect, Aldini's experiment's "enduring impression on the mind of scientists and ordinary people alike"—the idea of using emerging technology to reanimate a dead body—might have been influential in not only the formation but the "endurance" of the Frankenstein myth.

During the same period as Galvani and Aldini, the chemist Humphry Davy (1778-1829) proposed that electrical forces hold together the elements of a chemical compound. Davy's experiments on chemical compounds influenced the English surgeon John Abernethy (1764-1831). Inspired by Davy's experiments on electricity, Abernethy (1814) wrote in the *Edinburgh*

Review, "The experiments of Sir Humphry Davy seem to me to form an important link in the connexion of our knowledge of dead and living matter … it is electricity which also performs all the chemical operations in living bodies" (p. 396). Abernethy's inquiries into the "knowledge of dead and living matter" promoted the public's belief that electricity is the "vital spirit" or "vital force" that contributes to the life of an organism. His discussions questioned the boundaries between a living organism and non-living matter and appeared to challenge the dominance of religious beliefs in the causes of life.

During this period of the inquiry into the causes of life, the opposing theory to vitalism, the materialist theory, posited that life is possible due to physical processes within an organism. According to philosophy professor George Stack (2005), a materialist believes that "all events and facts are explainable, actually or in principle, in terms of body, material objects or dynamic material changes or movements" (p. 633). The materialist and surgeon William Lawrence (1783-1867) believed an organism's "material" organisation contributed to its life. Lawrence (1816) delivered a lecture at the Royal College of Surgeons where he expounded upon the principle of organization thus: "Organization means the peculiar composition, which distinguishes living bodies; in this point of view they are contrasted with inorganic, inert, or dead bodies" (p. 21). For Lawrence, the "peculiar composition" is an assemblage of functions of the internal systems of an organism. These internal systems relate to each other, and life is the result. Lawrence's exploration of the mysteries of life and its organising properties suggested that organic processes animate life.

Author and literature professor Roseanne Montillo (2013) has suggested that these aforementioned scientific explorations of the mysteries of life were public knowledge. Montillo has written about these experiments by Galvini and Davy, and has especially detailed the

experiments by Aldini. According to Montillo (2013), "Aldini's experiments, and the topic of reanimation in general, had become fashionable in all European society" (p. 9). Montillo suggests that scientists like Humphry Davy and his published poems and essays on the role of electricity and reanimation were popular with the public. According to Montillo (2013), Shelley's awareness and knowledge about these experiments inspired her to create her novel:

> Mary Godwin Shelley truly combined the urgency of scientific endeavors in the late eighteenth and early nineteenth centuries, the lure of forbidden knowledge, and the power of literary interpretation in her masterpiece, *Frankenstein; or, The Modern Prometheus*. (pp. 9–10)

Montillo (2013) suggests that Shelley "truly combined the urgency of scientific endeavors in the late eighteenth and early nineteenth centuries" to create her novel (pp. 9–10). Aldini's experiments reflected "scientific endeavors" that sought answers to the causes of life and answers to the mysteries of life and death and enabled Shelley's novel to make an impression upon the general populace at the time.

The novel *Frankenstein* combined what Montillo (2013) has identified as the early nineteenth-century's "urgency of scientific endeavor" and the Prometheus idea of the "lure of forbidden knowledge" in the creation of the monster. The mood and tension were depicted in a scene that encompasses Frankenstein's inner turmoil in his pursuit of "forbidden knowledge." Frankenstein narrates it thus:

> It was on a dreary night of November that I beheld the accomplishment of my toils. With an anxiety that almost amounted to agony, I collected the instruments of life around me that I might infuse a spark of being into the lifeless thing that lay at my feet. It was already one in the morning; the rain pattered dismally against the panes, and my candle

> was nearly burnt out, when, by the glimmer of the half-extinguished light, I saw the dull yellow eye of the creature open; it breathed hard, and a convulsive motion agitated its limbs. (Shelley, 1818, p. 58)

Like Prometheus, Frankenstein did not foresee the tragedy that would follow from his creation. "It was a dreary night," describes the dark mood surrounding the creature's birth. The descriptions in the scene are solemn, for instance, "the rain pattered dismally," and seem to foreshadow the tragedy that would follow Frankenstein. The scene is a recounted description of Frankenstein's "anxiety" and "agony," which suggest concern about his scientific pursuit of "forbidden knowledge." The birth of the creature is to "infuse a spark of being into the lifeless thing" and gives life to a dead being, which is referred to in this thesis as the *life-within-death paradox*. The birth of the creature sparked a myriad of philosophical debates on the dialectic between nature and technology, science and religion, creature and creator, and life and death. Shelley's creation of the monster is a synthesis of life and death. Such a synthesis of life and death helps to form the Frankenstein myth.

Barthes' (1972) ideas of myth illustrate that the Frankenstein myth's function is to "distort" (p. 121). In effect, the synthesis of life and death is a distorted idea about the existence of boundaries between life and death: the myth "distorts" by associating fabricated ideas about life and death with scientific ideas or meaningful scientific inquiry into life and death. In addition, in Barthes' view, these distorted ideas are concepts, which are predisposed to be appropriated into "diverse and irregular associations" (p. 119). The Frankenstein myth thus distorts the unique history and historical knowledge about the experiments in reanimation and vitalism. In effect, a) the myth distorts scientific inquiries into life and death; and b) the myth distorts the experiments in reanimation in order to enable one to examine the concept of infusing

"a spark of being into the lifeless thing" as the life-within-death paradox. Therefore, the Frankenstein Paradox is the first mythical theme in a cluster of organizing concepts:

Frankenstein Myth ↔ Frankenstein Paradox

Note that these themes are conceptual and not necessarily linear in historical time, since the paradox was a concept born from the novel, was intensified within it, and was echoed in subsequent critical discourse after the novel. Within each mythical theme, there are clusters of concepts that derive from authors' passages and experiments about reanimation to first form the Frankenstein Myth, the Frankenstein Paradox, and the Frankenstein Monster.

5.3 The formation of the "Frankenstein Monster"

From the conception of the novel until around the late twentieth century, receptions of the novel contribute to the cluster of *concepts* (according to Barthes, 1972) that formed the mythical theme "Frankenstein Monster." Several authors presented their concepts of the creation of the Frankenstein Monster in a) their interpretations of the novel; b) their descriptions of diverse social issues; and c) their reflections on society's uncertainty about technology. The following themes (1-3) in discourse were found to anchor the concepts within social reality. In addition, these themes helped to form and sustain the theme Frankenstein Monster and the Frankenstein Myth:

1) Disruption or perversion of the natural and social order.
2) Unnaturalness (technology).
3) Creation turned against creator.

5.3.1 The formation of the "Frankenstein Monster": The Romantics

Scott (1818/2002) wrote one of the first reviews of *Frankenstein* in the *Edinburgh Magazine* featuring *Frankenstein* as a romantic novel that did more than appeal to the

imagination of readers. Scott's review of the novel's themes contributed to the Frankenstein myth's connection to social reality. In his review, Scott outlines two divisions of works of fiction, the "marvelous" and the "supernatural" (p. 41). Scott suggests that the "marvelous" is the main object for both reader and author, enabling them to bask in the world of wonders and imagination. In the "marvelous" works of fiction, Scott asserts that readers assess the characters and various wonders within the narrative of that imaginative world. Scott assesses *Frankenstein* as a "supernatural" work of fiction that canvasses the "marvelous" in its narrative to intrude upon and disturb the laws of nature:

> A more philosophical and refined use of the supernatural in works of fiction, is proper to that class in which the laws of nature are represented as altered, not for the purpose of pampering the imagination with wonders, but in order to show the probable effect which the supposed miracles would produce on those who witnessed them. (p. 41)

According to Scott, the "supernatural" in works of fiction, describes an abnormality (the Frankenstein Monster) or some unbelievable event that disturbs the natural order of the real world. The reader and the author do not bask in this unbelievable event since the "supernatural" event in "works of fiction" is secondary to how it affects or disturbs the natural order of the world. Unlike the "marvelous" works of fiction, *Frankenstein's* "supernatural" event might have endured since it is "not for the purpose of pampering the imagination with wonders" but rather is a warning to the dangers of meddling with nature. In Scott's assessment, "a more philosophical and refined use of the supernatural" suggests Shelley might have been attentive to the scientific credibility of the monster's creation, actions and education. Scott emphasizes that *Frankenstein's* "supernatural" event—the monster's creation—is secondary to the "effects" the monster produces upon its creator and those around him. From a Barthesian perspective, Scott's concept

of the "supernatural" *distorts* the novel's ideas about the creation of the monster and is included in a cluster of concepts that exemplifies the novel's abnormal regression from *meaning* to *form*. That is, his reference to "supernatural" not only introduces a new concept of the monster's birth as an unnatural phenomenon, but also as a supernatural (mystical) one. As such, Scott distorts the novel's already distorted ideas about scientific inquiries into life and death. In essence, Scott's concept then contributes to the formation and endurance of the mythical theme, the Frankenstein Monster.

The "supernatural" in works of fiction are more likely to endure since there is more attention to the credibility of the unbelievable event.

The novel's "supernatural" event is the monster's creation and connects to the life-within-death paradox. The "supernatural" event also represents a disruption or perversion of the natural order. Thus, the extent to which *Frankenstein's* "supernatural" event describes the disruption and perversion of the natural order, the reader questions the presence of boundaries between life and death.

Further examples of concepts of life and death that help form the enduring theme "Frankenstein Monster" come from Bysshe Shelley (1818/2002). Bysshe Shelley's concept of the monster steered readers to focus on the human characteristics attached to the monster. He discussed a scene in the novel that describes a dialogue between the monster and a blind old man DeLacey. The old man offers the monster assistance, saying he trusts him and wants to help him integrate into society. The Monster replied thus:

> Excellent man! I thank you and accept your generous offer. You raise me from the dust by this kindness; and I trust that, by your aid, I shall not be driven from the society and sympathy of your fellow creatures. (Shelley, 1818, p. 160)

The monster's declaration, "you raise me from the dust" exemplifies its awareness of its low status and isolation from society. DeLacey says he is an "exile," and he unknowingly humanizes the monster by inviting it into dialogue and referring to it as "a human creature." The monster identifies with DeLacey's "exile" but conceals its own hazardous nature in two ways: first, it hides behind persuasive language that makes the blind old man perceive it to be "sincere." Its persuasive language masks its potential for chaos; and secondly, its form is hidden since DeLacey, by his own admission, "is blind and cannot judge" the horror of its features. Overall, Bysshe Shelley posits that the dialogue between the monster and the blind old man functioned to humanize the monster.

In humanizing the monster, Bysshe Shelley's focus on a humanized monster connects readers to the monster's emotions and introduces a new concept of the monster within the cluster of concepts that helped formed the mythical theme—the Frankenstein Monster. He commented that the encounter between the monster and the blind man De Lacey was an insightful illustration of pathos since it wants to be treated like a human being. His introduction of pathos is a new concept of a paradox of nature, that is, a humanized Frankenstein Monster. Bysshe Shelley commented, "The scene between the Being and the blind De Lacey in the cottage is one of the most profound and extraordinary instances of pathos that we ever recollect" (p. 44). Bysshe Shelley's comments on the scene's "pathos" suggest that the monster appeals to be treated like a human. Since Ferrell's ideas of myth illustrated how stories connect to human emotions, such as expressions of hopes and fears, the scene's "pathos" is an enduring emotional appeal that extends to the reader. According to Bysshe Shelley, "it is impossible to read this dialogue … without feeling the heart suspend its pulsations with wonder, and the tears stream down the cheeks" (p. 44). In making emotive statements such as "the heart suspend its pulsations," Bysshe Shelley

ascribes sympathy with the actions of the monster to be those emotions proven identifiable with the reader. Nevertheless, the humanized monster's hope to be treated as human appears disturbing, empathetic, and paradoxical to the reader since the monster's appeal for virtue is beyond its nature. The monster's appeal for virtue connects to the Frankenstein Paradox since its appeal represents a disruption or a perversion of ideas about the relationship between the nature of the monster and a human being.

In addition, Bysshe Shelley's focus on the consequences of the monster's paradoxical nature is a concept that connects to the Frankenstein Myth:

> He was an abortion and an anomaly, and tho' his mind was such as its first impressions formed it, affectionate and full of moral sensibility, yet the circumstances of his existence were so monstrous and uncommon, that when the consequences of them became developed into action, his original goodness was gradually turned into the fuel of an inexhaustible misanthropy and revenge. (p. 44)

Bysshe Shelley's use of the word "abortion" presents vivid representations to the reader and connotes neglect and the disregard of something unwanted, like a tumour. In addition, his use of the word "abortion" connects to the life-within-death paradox since "abortion" represents a disruption or perversion of the social and natural order. He gives examples of the disruption of the social and natural order by noting the ill consequences and the unnatural "circumstances" of the creature's "monstrous and uncommon" existence in society.

In describing the monster's existence in society to be "monstrous and uncommon," Bysshe Shelley's concept does not function to be merely didactic, a teaching reference for morals, but rather functions to be an enduring warning of the consequence of the monster's birth. Bysshe Shelley (1818/2002) stated:

> Treat a person ill, and he will become wicked. Requite affection with scorn;—let one being be selected, for whatever cause, as the refuse of his kind—divide him, a social being, from society, and you impose upon him the irresistible obligations—malevolence and selfishness. It is thus that, too often in society, those who are best qualified to be its benefactors and its ornaments, are branded by some accident with scorn, and changed, by neglect and solitude of heart, into scourge and a curse. (pp. 43–44)

Bysshe Shelley discusses the consequences of the monster's ill treatment by society. He uses negative and divisive language, such as "scorn," "selfishness," "malevolence," to describe how the monster is treated, and he uses "solitude of heart" and "curse" to describe the effects of the monster's ill treatment and the consequences to society. These words also provide the concepts that form the mythical theme the Frankenstein Monster in that they a) represent disruption and perversion of the social order; and b) represent creation turned against creator. These concepts steer the readers' attitude about how the monster's isolation by society formed its cruel nature. Since Ferrell's theory illustrates how myth connects the *known* with the *unknown*, Bysshe Shelley concept of the monster's "wicked" nature (the unknown) connects with a known idea ("abortion") that disrupts and perverts nature. From Ferrell's perspective of myth, Bysshe Shelley's use of the term "abortion" illustrates myth's power to connect the unknown to the known and stir anxiety in readers. Bysshe Shelley's use of the word "abortion" is in essence his concept of Mary Shelley's monster in 1818 that adds to the cluster of "concepts" that form the enduring mythical theme "Frankenstein Monster."

5.3.2 The Frankenstein Monster in the industrial period

Around the time of the industrial period, non-scientific themed articles provided diverse *concepts* that helped to form and sustain the theme Frankenstein Monster. The non-scientific

themed articles were in mainstream media (newspapers) and journals that referred to the Frankenstein monster in order to describe uncertainty about emerging technologies. In addition, authors reimagined and recycled concepts of the monster and its creation in order to highlight the paradoxical relationship between technology and nature, and technology and society. The articles represent expressions of concepts that connect to the paradox in that they a) represent a fusion of the natural and unnatural (biological and technological processes); b) represent a distortion or perversion of the social order, that is, the paradoxical relationship between society and Frankenstein's monster; and c) represent creation turned against creator.

The *New York Times* (1857) referenced the Frankenstein monster to give a pessimistic outlook on the financial market. The article reported on a dire economic crisis that took place in 1857 at the Stock exchange: "The French novelist, Balzac, invented a monster, midway between the Briareus of antiquity and the Frankenstein of Mrs. Shelley—a creature, that is, absolutely without conscience, and multifariously armed for mischief … There is a monster in Wall Street …" (para. 1–6). From Ferrell's perspective, myth connects the abstract "Monster" (the *unknown*) to the metonym "Wall Street" a "physical" spatiality (an actual street) *known* in Western culture to be associated with financial markets. In effect, the connection between the known and the unknown in the term "monster in Wall Street" gives a pessimistic view of the financial market.

The pessimism in the financial market underscored a disruption of the social order. Further pessimism was echoed later in the *New York Times* (1924) in an article that reported on an emerging technology, synthetic chemical organisms. The *New York Times* published Francis Garvan's comments that alluded to *Frankenstein* in order to express his uncertainty about synthetic technology. As the president of the Chemical Foundation, Garvan expressed uncertainty about the manufacture of synthetic chemical organisms and objected to a plan that

would build up America's chemical industry to compete with the Germans. Garvan commented that increasing America's inventory of synthetic chemicals is "building up the Frankenstein that caused the war" (para. 1). Since Ferrell postulated that myths are "extensions of our human consciousness," Garvan's reference to "Frankenstein" and "war" reflect expressions of *fears* about the creation and the "building up" of synthetic technology. In addition, from Ferrell's perspective, Garvan connects the *abstract* phrase "Frankenstein" with the *physical* (synthetic technology) and "war" (the known) to communicate the potential destruction of America's financial interests. The passage by Garvan ideologically connects and sustains the theme Frankenstein Monster, for the passage expresses an underlying fear of the role of synthetic technology as a disruption of the social order.

Further concerns about forms of artificial materials or synthetic technology appeared in London's newspaper *The Times* (1926). The article was a report on the technological processes of viscose silk or artificial silk: "But who can say that the monster will not some day dominate, if it does not destroy, every other branch of the textile industry" (para. 11). The article titled "Frankenstein," is a report on "the monster" that alludes to the novel *Frankenstein* and shows concern that technological processes of artificial silk will "dominate" and "destroy" competition (natural processes) within the wholesale manufacturing of silk. Like Garvan's (1924) comments, *The Times* (1926) article alludes to the novel's theme of the creation turned against creator. The use of the phrase, "if it does not destroy" is an ideological connection that sustains the theme Frankenstein Monster, since it conveys a disruption in the social order.

Further connections to the themes that convey disruptions in the social order appeared in *The North American Review*. Savage (1929) discussed the loss of intercollegiate football to the "menace" and "the Frankenstein" that continues to build up "the monster of commercialism" (p.

649). Savage's use of the word "monster" is abstract and could mean a hazard, an annoyance, a scare, or trouble. Given Ferrell's theory illustrates how myths connect the known with the abstract, Savage's concept of a "monster in commercialism" connects the term "commercialism," which is known and functional within social reality, to the abstract "monster." The juxtaposition of two abstract terms, one being "commercialism," that is known and functional within the social arena, and the other abstract term "monster," is credibly contextualized, and as such, is socially relevant. These synonyms connect and sustain the concept of a menacing Frankenstein Monster, for the term "menace" represents a perversion of the social order.

Further ideological connections to the Frankenstein Monster appeared in *The Journal of the Franklin Institute* (Thomas, 1933). Economist James Shelby Thomas addressed the Commonwealth and Southern Corporation of New York and noted his support of the industrialization of agriculture. Thomas criticised those who opposed new mechanization techniques in agriculture and alleged, "The machine is a Frankenstein Monster and will ultimately destroy us" (p. 255). For Thomas, the "machine" is used as a metaphor to represent widespread mechanization in commercial enterprises. The comment that "the machine is a Frankenstein Monster" elucidates the article's pessimistic view on emerging technologies and connects to the Frankenstein Paradox since emerging technologies (the machines) represent a disruption of the social order. Like Garvan (1924), *The Times* (1926), and Savage (1929), Thomas' discussion alludes to the theme, the creation turned against creator. As such, the discourse reveals concerns about the consequences of emerging technologies and ideologically connects to the Frankenstein Monster.

5.3.3 The formation of the Frankenstein Monster: The literary critics

In the late twentieth century, selected articles written by literary critics provided *concepts* that sustained the theme, the Frankenstein Monster, in that they a) represented a fusion of the natural and unnatural (biological and technological processes); and b) represented a disruption in the natural and social order. These articles were literary criticisms but the authors used the novel to make claims about how its themes connected to social reality.

In Sterrenburg's (1979) essay, he discusses the Frankenstein monster in terms of social disorder and calls Frankenstein's monster a "revolutionary Monster" (p. 165). He then examines the Frankenstein monster as a rebellious and antagonistic creature that creates a menace to society and disrupts the social order. According to Sterrenburg, "Monsters are driven to rebellion by suffering and oppression" (p. 165). For Sterrenburg, monsters are not intrinsically rebellious but are "driven to rebellion" by an oppressive society. His concept about the monster not only connotes the monster's anti-social and rebellious nature but also appears to justify it. Given Barthes' theory that myth's function is to *distort* meaning, Sterrenburg's concept of a "revolutionary monster" is a distortion of the novel's original monster, for he appears to justify its existence by condemning society overall for its actions.

In addition, Sterrenburg's analysis distorts Frankenstein's introspection to discuss the monster in terms of dialectic in society. In effect, he articulates that "revolutionary monsters" are the products of society since they are driven to rebellion by "oppression." His concept also evinces the theme of creation turned against creator wherein the Frankenstein monster is the rebel driven by society's "oppression" to turn against them. Sterrenburg's concept of a "Revolutionary Monster" helps to connect with and sustain the theme Frankenstein Monster, for his concept of the monster represents a perversion of the social order.

Griffin's (1979) discussion of Frankenstein's monster moves away from cultural concerns about the perversion of the social order to elemental concerns about the perversion of the natural order. In Griffin's article, he provides concepts of the monster that helps to connect and sustain the theme Frankenstein Monster. These concepts a) represent a disruption in the natural order; and b) represent a synthesis of polarized elements. Griffin has explained how the synthesis of conceptually polarized elements in discourse can perplex readers. In his article, he elaborates how the "Romantic vision … introduces Frankenstein's dreams of vital fire or 'spark' interpenetrating and animating matter otherwise cold and dead" (p. 50). In effect, "the vital fire" is the life and the light that animate the "cold and dead" monster. The reader of *Frankenstein* is then left perplexed and perturbed by Frankenstein's creation of the monster, which exemplifies a synthesis of "vital fire" and the "cold and dead." Ferrell's theory illustrates how myths incorporate an emotive component within the connection between the abstract and social reality. According to Griffin, this synthesis in Shelley's novel is not harmonious and becomes problematic to the reader through emotive association with fire representing life and cold representing death. Griffin asserts that the belief in the existence of natural boundaries between "fire" of life and the "cold and dead" creates a harmonious relationship with nature, where the reader finds comfort, security, and balance in these boundaries. As such, Griffin's concept about Frankenstein's creation of the monster functions to erode the readers' beliefs in these natural boundaries and creates perplexity.

Accordingly, Griffin's concept of the monster's nature fits within the cluster of concepts that form the theme Frankenstein Monster. To summarize the themes so far:

Frankenstein Paradox ↔ Frankenstein Monster

Altogether, Griffin's concept of the Frankenstein Monster is an overarching and enduring description of the period's (1818–1979) concepts of the monster's nature by way of a synthesis of the unnatural and the natural.

5.4 Frankenstein foods: A synthesis of the unnatural and the natural

Articles from the late twentieth century to the early twenty-first century were expressions of *concepts*, in particular Griffin's earlier ideas about the synthesis of the unnatural and the natural, that helped to create and sustain the mythical theme "Frankenstein Foods." The following themes (1-4) in discourse were found to anchor these concepts within social reality. In addition, these themes helped to form and sustain this mythical theme.

1) Disruption or perversion of the natural and social order.
2) Unnaturalness of food processes.
3) Fusion of the natural and the unnatural (food and technology).
4) Creation turned against creator

It was important to find and focus on articles about the new emerging technology (GMFs) that might have contributed to an erosion of the public's beliefs in the boundaries between natural and unnatural elements. According to Cook (2004), the term "Frankenstein foods" was first used in the UK newspaper *Daily Mirror* on January 28, 1999 and became the forerunner to an upsurge of its subsequent applications in scientific journals, magazines, and newspapers (p. 96). The journalist Kenneth Klee used the term "Frankenstein foods" in a *Newsweek* article dated September 13, 1999 to depict uncertainty about GMFs and its impact on the environment and economic sustainability. The term exemplifies the fusion of fact (foods) and fiction (Frankenstein) to express uncertainty about GMFs. Given Barthes' *mythological-semiotic* theory of myth that illustrates how a sign's *meaning* evaporates into *form*, in these articles, GMFs'

meaning evaporates into form, that is, the abstract term "Frankenstein foods." In form, an abnormal regression transpires from GMFs (meaning) to "Frankenstein foods" (form). In form, *Frankenstein foods are not represented in discourse by scientific facts about its nature or by the scientific processes of its creation*. Instead, in form, the term "Frankenstein foods" connects with GMFs and represents uncertainty about GM technology.

Yet, the emotional component is relevant in the use of the term "Frankenstein foods" and in the term's association with GMFs. Klee (1999) mentioned Europe's opposition to U.S. exports of GMFs, citing "a strange hybrid of cultural and economic fears" (para. 2). The "cultural and economic fears" describe the public's anxieties about GMFs. However, Klee does not offer any objective argument to substantiate these "fears" towards GMFs. Klee does not mention any sicknesses that have befallen anyone due to GMFs. Since Ferrell's theory illustrates that myths are "extensions of our human consciousness, being expressed as hopes and fears," the public's "fears" about GMFs are formed within its association with the Frankenstein Myth. From Ferrell's theoretical perspective, myths "communicate an understanding of the world," and the article's reference to "Frankenstein foods" communicates an understanding of GMFs that do not necessarily represent scientific facts. From Ferrell's perspective of myth, the public's fears of Frankenstein foods (the *unknown*) are anchored within social reality by fears about GMFs (the *known*). The connection between the abstract concept "Frankenstein foods" with GMFs also connects the concept's embedded fear of a disruption of the natural order. Subsequently, the public's fear of Frankenstein foods is anchored within social reality by the fear of the concept of GMFs, which also helps to sustain the Frankenstein Paradox and the Frankenstein Myth in that the concept of GMFs represent disruption of the natural order.

In effect, in 1999, the fear of Frankenstein foods connects with the concept of GMFs and to the Frankenstein Paradox. The themes so far are illustrated as follows:

Frankenstein Myth ↔ Frankenstein Paradox ↔ Frankenstein Monster ↔ Frankenstein Foods ↔ GMFs.

In these themes, the Frankenstein Paradox preceded the Frankenstein Monster and then Frankenstein Foods. Since Barthes suggested that concepts have a tendency to be usurped into "various irregular associations," the concept of GMFs was usurped into an irregular association of the abstract with the material, namely the term "Frankenstein foods." From Barthes' mythological-semiotic perspective, the concept of "Frankenstein foods" is a form and an extension of the Frankenstein Myth. As a result, the meaning of "Frankenstein foods" is a *distorted* idea. Given Barthes' theory illustrates that the concept fills the form of the myth, the public's fear of Frankenstein foods might not have derived solely from the theme Frankenstein Monster that precedes it. Instead, the fear of Frankenstein foods might also have derived from its connection with the Frankenstein Myth.

Further evidence of themes that sustain the Frankenstein Myth through transmission of fear comes from Judy Gerstel (2002) in the *Toronto Star*. Gerstel further echoes the fear of Frankenstein foods and GMFs, and she imposes urgency about its effect on health. She alludes to *Frankenstein* in her reference to biotechnology and GMFs, and as such, she provides concepts that form enduring connections to the theme Frankenstein Foods and sustain its connection to the Frankenstein Myth. Gerstel states, "Fear of science and its potency evoked Mary Shelley's Frankenstein—linked across the millennium to biotech with the term 'Frankenfood'" (para. 1). Gerstel underscores the public's perpetual "fear of science," which is due to the synthesis of biology and technology. According to Gerstel, the public's "fear" is about the

potential harm to humans caused by biotech industries that produce synthetic organisms, such as GMFs, for public consumption. Gerstel's use of the word "fear" functions to steer the public's attitude about Frankenstein foods and biotechnology (GMFs). Her use of the word "fear" solidifies the meaningful and enduring connection between the term "Frankenstein foods" and GMFs. The connection was reinforced by the idea that the fear of Frankenstein foods relates not only to the product itself but also to the consequences to the environment and human health.

Gerstel quoted Brian Tokar, biotechnology's project director at the institute for Social Ecology in Vermont, who discussed the threat of Frankenstein foods to the environment and human health. Tokar (as quoted by Gerstel, 2002) stated, "Over the last 50 years, cancer rates have rocketed but people's genetics didn't change. What changed was the environment. Why aren't we looking at that?" (para. 12). Tokar's report of "cancer" and the "environment" evokes fear of GM technology as a disruption of the natural order. In light of Ferrell's (2000) ideas about how myth connects the known to the unknown, the word "cancer" (the known) connects the idea of harmful consequences (the unknown) to Man creating and consuming inorganic substances. Ferrell's ideas of myth illustrate its power to evoke emotions, and applying his ideas shows emotive power behind the use of the word "cancer" that elicits fear in consumers.

5.5 Frankenstein Foods and GMFs—an unbreakable connection

Two of the three selected articles attempted to break the ideological connection between GMFs and Frankenstein Foods. These two articles reflected new diverse attitudes towards GMFs and reflected a new kind of uncertainty about GMFs.

The themes (1-4) were found to sustain the ideological connection between Frankenstein Foods and GMFs. These themes were interrelated with other mythical themes across eras (1818-

2015). Altogether, these themes were found to be the most enduring themes embedded within the *concepts* (according to Barthes, 1972) in various discourses:

1) Disruption or perversion of the social and natural order.
2) Unnaturalness (technology).
3) Fusion of the natural and the unnatural (human and technology).
4) Creation turned against creator.

Three main artifacts, online magazines, and newspapers were examined; Phillip Bowern (2015) in *Western Morning News*, Ian Ashbridge (2010) in *Crops*, and James Gillespie (2013) in *The Sunday Times*. These authors are relevant since they discussed moral issues about GMFs on a macro level. They also deliberated on the environmental issues of sustainability and food consumption and did not confine their deliberation about the environment to scientific detailed exposition about GMFs as an emerging technology. Instead, their discussions were about the economic and environmental ramifications of GM food distribution and production.

In Ashbridge's (2010) article, famine is the disruptor of the natural order and the threat to the environment and world population. The article positions Frankenstein foods (GMFs as the emerging technology) as the solution and not the problem in the fight for human survival. Ashbridge, business editor for the UK newspaper *Farmers Weekly*, traveled through southern Brazil where he spoke to scientists about the public's acceptance of GMFs. In his article, he notes that it is mostly European farmers that are not accepting GMFs due to the "'Frankenstein foods' stance adopted by large sections of the British media that acceptance of GM crop production for human consumption remains far, far away" (para. 3). Although Ashbridge notes that European consumers do not accept GMFs, he asserts that Brazilian scientists not only have endorsed the use of GM technology in Brazil to produce GMFs for "human consumption," but

they also have cited the technology as necessary for human survival. Ashbridge noted that many Brazilian farmers have used GM technology to produce GMFs that are resistant to "herbicides, insect damage or virus attack" (para. 5). He reports that Brazilian scientists agree that foods that are resistant to "virus attack" serve to feed a growing population. According to Ashbridge, "Human population will reach 9bn by 2050. And that to avoid a world famine food production will need to at least double" (para. 5). Ashbridge uses the phrase "world famine" in order to change public attitudes towards GM technology. His use of the phrase imposes fear and creates urgency in the minds of farmers that GM technology might be the solution to "world famine." In doing so, he provides a concept that attempts to break GMFs' connection away from the term "Frankenstein foods" and away from the transmitted form of *Frankenstein's* meaning since the early nineteenth century. Given Saussure's (1916/1972) linguistic-semiotic theory holds that a sign's meaning is *invariable* due to an "inheritance from the past," GMFs' meaning not only connects to the term "Frankenstein foods," but also connects to the term's inherited meaning from the past. GMFs' inherited meaning derives from *Frankenstein* since 1818, the Frankenstein Myth, and the Frankenstein Paradox. Ashbridge's attempt to break GMFs away from the term "Frankenstein foods" might be futile in consideration of the term's connection to a chain of meanings embedded within the Frankenstein Myth across time through the mythical themes. Since these themes represent disruptions in the natural order, GMFs also represent a disruption in the natural order. Subsequently, attempts to its break its meaningful connection to its past might not be possible.

In further attempts to break GMFs' ideological connection away from the term "Frankenstein foods," Ashbridge situated climate change as a threat to human survival and GMFs (the emerging technology) as the solution. Ashbridge noted, "Add in climate change that

could strip the world of some of its food producing areas, and increasingly more scientists and deep thinkers are endorsing GM technology as one of the practical ways of meeting this challenge" (para. 6). The use of the phrase "climate change" imposes uncertainty about the environment's ability to sustain the conventional ways in which farmers produce food. The conventional ways of food production are not meeting the needs of a growing population and so scientists are "endorsing GM technology" as a solution. Ashbridge reveals concern that "climate change" might lead to poverty, the degradation of arable land, and "world famine" or a severe food crisis. Interestingly, Ashbridge does not use the term "Frankenstein foods" as the defence against "climate change" or "world famine." From Saussure's theoretical perspective of a sign's invariable meaning, Ashbridge might not have used the term since it inherited its thematic meaning from the Frankenstein Paradox and the Frankenstein Monster. Instead, he uses the terms "GMFs," or "GM crops," or "GM technology" as the defence against the environmental threats.

In the United Kingdom (UK), GM technology was not positioned in discourse as the defence against environmental threats, since the term "Frankenstein foods" held strong meaningful connections with GMFs. For example, there are studies in the UK on discourse that have discussed social divisiveness, the social risks of GM production and consumption, and the social and environmental concerns about GM technology (Augoustinos, Crabb, & Shepherd, 2010; and Shaw, 2002). From Saussure's theoretical perspective on the invariability of a sign's connection to its past, the uncertainty about GMFs might be due to its strong ideological connection to the Frankenstein Myth that appears not only to be strong but enduring. Still, outside of countries such as the UK, the ideological connection might not be just as strong, or perhaps non-existent. In effect, Ashbridge's article leads to a consideration that in countries such as Brazil, GMFs may be taken to be beneficial, that is, necessary for human survival.

A further controversy appeared in the *Sunday Times* that reflected the public's attitudes towards GMFs as beneficial. In Gillespie's (2013) article, he discusses how the environmental activist Mark Lynas, originally opposed to GM technology, justified scientific intervention within nature and the creation of GMFs for the purposes of avoiding world famine. Gillespie quoted Lynas' speech to the Oxford Farming Conference where he renounced his original position. Lynas (as quoted in Gillespie, 2013) stated, "I am also sorry that I helped to start the anti-GM movement and that I assisted in demonising an important technological option which can be used to benefit the environment" (para. 4). Lynas uses the word "demonising" in an attempt to change the public's attitude towards GMFs and break GMFs away from its inherited meaning, that is, its connection with the concept "Frankenstein foods." Given Barthes' (1972) mythological-semiotic theory illustrates how concepts are "predisposed to be usurped into various interpretations," GMFs demonstrate the malleable nature of a concept that is "predisposed" to be appropriated into various "interpretations" (p. 119). For example, GMFs are regarded as harmful to the environment, as shown in Gerstel (2002) and Klee (1999), but in Gillespie's (2013) article, they are regarded as an "important technological option" that can "benefit the environment."

In order to substantiate GMFs as beneficial to the environment, Lynas alluded to the novel and distorted the monster's creation scene. He attempted to suppress the public's fear of GMFs and expound on his support for GMFs. Lynas (as quoted by Gillespie, 2013) wrote:

> We employed a lot of imagery about scientists in their labs cackling demonically as they tinkered with the very building blocks of life. Hence the Frankenstein food tag ... What we didn't realise at the time was that the real Frankenstein's monster was not GM technology, but our reaction against it. (para. 9)

Lynas' reference to "scientists in their labs cackling demonically" is a concept of Frankenstein's creation of the monster. He attempts to change the public's perception of GM technology by explicitly stating that it is not the "Frankenstein Monster." Given Saussure's (1916/1972) theory of invariability illustrates that a sign resists change due to its inherited meaning, the concept of GMFs as Frankenstein foods resist change due to its strong ideological connection to the concept of the Frankenstein Monster, which also inherited its meaning from the Frankenstein Myth.

Evidence of the sustained ideological connection between Frankenstein foods and GM technology appeared in the UK newspaper *Western Morning News*. In this article, Bowern expresses ideas that provide concepts that connect to the Frankenstein Paradox in that they a) represent a fusion of the natural and unnatural (biological and technological processes); and b) represent a disruption of the natural order. He echoes society's tensions about GMFs and their impact on the environment. In his article, Phillip Bowern (2015) writes:

> Trying to persuade a shopper to buy a product recently labelled "Frankenstein Food" would, after all, challenge even the canniest of marketing men. And scenes of whitesuited protesters, often wearing gas masks, tearing up GM maize on UK test sites drove home the message that this was dangerous stuff. With some reluctance many in the farming and food industry dropped any plans to develop the technology and an EU ban effectively stifled research. (para. 3)

Bowern's use of the phrase "dangerous stuff" leads one to consider that the UK public did not ignore the historical meaning embedded within GMFs' connection to the Frankenstein Paradox and the Frankenstein Myth. From Saussure's theoretical perspective of a sign's invariability, Bowern's phrase "dangerous stuff" suggests an ideological connection with its past, that is, the Frankenstein Paradox and the Frankenstein Myth. Bowern's discourse reinforces the bond

between the term “Frankenstein foods” and GMFs to perpetuate the fear of unnatural processes. *Bowern did not give evidence that GMFs have caused harm to the environment and human health*. Instead, his use of the term “Frankenstein foods” suggested its potential to cause harm to the environment and human health.

The inherited meaning embedded within Frankenstein foods upholds tensions in society about GM technology as environmentally harmful and unsustainable. This tension seems to be due to society’s fidelity to past fears about emerging technologies and society’s present fears about the future environment. The term “Frankenstein foods” represents more than the right or wrong about GMFs. The unchanging nature of the term’s meaning evinces the public’s sustained uncertainty about GMFs’ unnatural processes. The discourse in this period provided clues to society’s motivated action against biotechnology industries, whereby industries can no longer treat public concerns about food processes and their social and economic consequences with scant regard. The articles in this period did not reflect anti-establishment or anti-capitalist sentiments. Instead, they reflected tensions in society about biotech institutional structures, and how these impact cultural norms and practices. The tensions within society are also about the consequences of technological manipulation of foods to public health. The articles further showed that matters of the environment and public health created the conditions for the continuity of the term “Frankenstein foods” in social discourse.

Overall, the articles contributed to further understanding of *Frankenstein’s* endurance and contemporary relevance. The authors’ concepts about “Frankenstein foods” and GMFs gave insight into social fears about the environment, economy, and public health but appeared not to depart from Frankenstein foods’ historical connection to the Frankenstein Myth. In particular, the Frankenstein Myth’s pliable and abstract nature facilitated its meaning being conformed to

contemporary concepts according to society's environmental and moral issues while simultaneously resisting change in its original meaning.

Chapter Six: Discussion/Conclusion

In this thesis project, Barthes' *mythological-semiotic* system inspired the creation of a mythological system that highlights some of the *concepts* (according to Barthes, 1972) within discourse that contributed to the birth of the Frankenstein Myth prior to 1818. In addition, the system highlights the novel's endurance and relevance since 1818 leading to its association with biotechnology in 2015. The concepts were taken from interpretations and discourse about the novel's ideas over several epochs. The clustered concepts form the mythical themes within the mythological system.

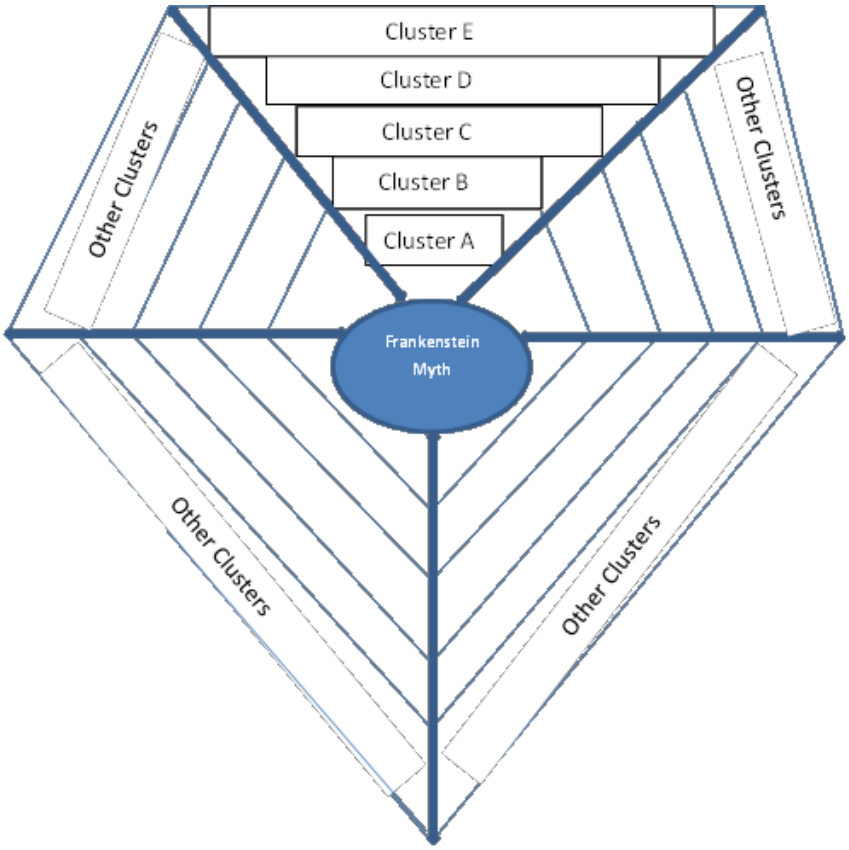

Figure 1: Mythological System

Figure 1 summarizes my analysis chapter findings and illustrates a snapshot of the accumulated clusters of "concepts" within the mythological system. In Figure 1, the mythological system

exists simultaneously with the novel *Frankenstein*. The mythical themes and clusters (A–E) of concepts are the focus of this thesis. Thus, the mythological system highlights the clusters that show a hypothesised historical trajectory of the concepts about life and death, (bio) technology, and the use of the term "Frankenstein foods." The mythological system highlights clusters of concepts that contributed to the endurance of the Frankenstein myth.

The up–down and left–right arrows (↔) and web lines (–) on the figure indicate the interconnections between the mythical themes and their clusters of concepts.

1. *Cluster A* represents clusters of concepts that formed the "Frankenstein Myth" pre-1818. These concepts represent a) distortions of scientific inquiry into life and death; b) the fear and fascination with emerging technology and the unnatural; and c) the disruption or perversion of the natural order.
2. *Cluster B* represents clusters of concepts that formed the mythical theme "Frankenstein Paradox," or, *the life-within-death paradox*, in approximately1818. These concepts represent a) distortions of acceptable boundaries between life and death; and/or b) fusion of the natural and the unnatural (human and technology).
3. *Cluster C* represents clusters of concepts that formed the mythical theme "Frankenstein Monster" found approximately from the early nineteenth century to the late twentieth century. In discourse, the Frankenstein monster represents the threat of technologies turning against man as well as to represent disruptions in social structures and the natural order.
4. *Cluster D* represents clusters of concepts that formed the mythical theme "Frankenstein Foods" found approximately from the late twentieth century to the early twenty-first century. These concepts highlight a) the paradoxical relationship between technology

and nature, society and technology; b) biotechnological uncertainty; and c) the juxtaposition of natural and unnatural elements.

5. *Cluster E* represents clusters of concepts that formed the mythical/biotechnological theme "GMFs" found approximately in the early twenty-first century. These concepts show the diverse and divisive attitudes in discourse about GMFs. The discourse reflects endorsements of GM technology as a way to avoid world famine.
6. *"Other Clusters"* represent the possible historical trajectories of the Frankenstein myth. These clusters represent other concepts outside the chosen scope for the thesis' analysis. For example, these clusters could represent other concepts about gender, identity, and culture that might also directly contribute to the endurance of the Frankenstein Myth.

The arrows between the Clusters A to E and the arrows around the mythical themes indicate the interconnections between the mythical themes that formed and sustained the mythological system. No unidirectional continuity occurs in the formation of the clusters of concepts along a historical time-line. The clusters are representative of various approximate moments along the time-line. In addition, there are discontinuities in the chronology within the clusters of concepts. For example, in Cluster A, approximately 600 scholarly and peer reviewed articles were surveyed in order to locate articles and books that deal with the early history of the Frankenstein myth. However, the selected articles by Abernethy and Lawrence were published within two years of each other: Abernethy's article was published in 1814 and Lawrence's in 1816. Both articles represent "concepts" about scientific inquiry into life and death in the early nineteenth century. In addition, they show the core themes that arose from the Frankenstein myth and their association with technological uncertainty. For example, Abernethy's (1814) inquiry into our

"knowledge of dead and living matter" and Lawrence's (1816) inquiry into the composition of organisms that "distinguishes living bodies" from the inorganic might have influenced the birth and endurance of the Frankenstein Myth and the Frankenstein Paradox (mythical themes).

This is not to say that other factors, such as early films, did not contribute to the myth's endurance. According to Glut (1954), approximately 55 films[9] postulated concepts of a physical monster that evoked powerful emotive associations with audience in the early twentieth century. These films show how early representations of *Frankenstein* were a mixture of various genres, namely, horror, drama, and comedy. These films not only depicted a physical confrontation between monster and Frankenstein but also depict a dramatic and ideological conflict between technology and nature. In essence, the confrontation between Frankenstein and the monster cinematically personifies the ideological tensions between monster and its creator; and nature and technology. This thesis transcends cinematic representations to focus on the ideological tensions, such as, social (scientific and economic) disruptions, which are also examples of the concepts that form within Clusters A, B, and C. The mythological system could be used to highlight other concepts, such as cinematic representations of the Frankenstein Monster, and show how these representations might also have contributed to the myth's endurance.

In order to form Cluster C, approximately 600 articles were surveyed to locate articles whose concepts associated the Frankenstein Monster with social and natural disorder. For example, concepts in the mid twentieth century, such as Garvan's (1924) "Monster in Wall Street" and Savage's (1929) "Monster of commercialism" represent two of many concepts of the Frankenstein Monster. Although only a five-year gap exists between these two publications, they

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[9] See Appendix A for a summarized list taken from D. F. Glut's (1984) *The Frankenstein catalog*.

are highly representative of many articles that used the Frankenstein Monster to represent disruptions in the social order.

Within the mythological system, these clusters (A–E) offer insight into the enduring quality of the mythical themes. In effect, the enduring qualities are the underlying meanings or themes that anchored the era's concepts within social reality. For example, the theme represented mostly in Abernethy's (1814) and Lawrence's (1816) discourse was the distortion of scientific inquiry into the knowledge of life and death. The novel's distortion of scientific inquiries into the knowledge of life and death created and sustained the Frankenstein Myth and the Frankenstein Paradox (Clusters A &B). Abernethy's scientific inquiries into the "connexion of our knowledge of dead and living matter" explored electricity as the connection between dead and living matter. However, ideas in the novel depicted an infusion of life within death. Given Barthes' (1972) ideas illustrated that myth's function is to *distort*, scientific inquiries such as Abernethy's inquiry into the knowledge of life and death were distorted into a concept of life within death, a perversion of the natural order. Their concepts proved to be effective in sustaining the Frankenstein Myth and the Frankenstein Paradox over time. The themes sustained the myth by the underlying premise of scientific investigation about "electricity" that questioned the presence of boundaries between life and death. The themes connected and sustained the concepts within the mythological system and simultaneously anchored them within social reality. According to Barthes' mythological-semiotic theory that explained myth's systemic function, the Frankenstein myth has created its own *system* that has sustained itself.

The system's cluster of concepts endures due to the interconnections among themes, and they give insights into the Frankenstein Myth's nature and function. Abernethy's exploration of "electricity" was an inquiry into the possibility that "electricity" was a connection between the

dead and the living. According to Ferrell's (2000) perspective of myths' nature and function, the Frankenstein Myth's nature and function is to connect the abstract to the real. The nature and function of the Frankenstein Myth shown in the period pre-1818 demonstrated that the myth's distortion of scientific meaning was its ability to connect abstractions ("life-within-death") to reality ("electricity") and to connect the natural with the unnatural (to connect the human with technology). Abernethy's inquiry into the knowledge of life and death is an inquiry into the *unknown*, and myth anchors the unknown through connections with *known* phenomena.

Ferrell's concept of the function of the myth may demonstrate that myths like the Frankenstein Myth endure because they do more than simply connect abstract or the unknown to the physical world, the known; they gain social relevance through their ability to elicit strong emotions such as fear and hope. Abernethy's concept of "electricity" might have inspired public's hopes about "electricity" being the vital ingredient (the emerging technology) that could conquer death.

From the early nineteenth century to the late twentieth century, the fear of emerging technologies, and such expressions of fear, came in the form of the Frankenstein Monster. These expressions were linked to concepts that proved to be crucial in sustaining the theme Frankenstein Monster over time. Thomas' (1933) discussion highlights a unique concept, that is, the public's perception of industrialization as a "Frankenstein Monster" that "will ultimately destroy us" (p. 255). Thomas gives an account of society's uncertainty of an emerging technology, that is, the mechanization of agricultural processes. Since Saussure's theory illustrated that a sign's meaning endures due to a balance between its *variable* and *invariable* nature, the varied themes that formed the Frankenstein Monster endured due to both their resistance and adaptability to change. Expressions of fear changed their forms within different

eras and yet maintained connections to the Frankenstein Myth. From Saussure's theoretical perspective, the mythical themes endure since "what predominates in any change is the survival of earlier material" (p. 75). Within the mythological system, the mythical themes inherit their meaning from the Frankenstein Myth across several epochs. The underlying variable concept—a disruption of the natural and social order—anchored the period's theme Frankenstein Monster within social reality and sustained its invariable connection to the Frankenstein Myth.

Another expression of fear in the form of the Frankenstein Monster theme was found in Sterrenburg's (1979) concept of the "revolutionary monster" (p. 165). Sterrenburg postulated the "revolutionary monster" as a consequence of "oppression and misrule" and exposed society's fear of the disruption of social harmony through rebelliousness and radicalism. In an earlier period, Savage (1929) had used the concept of the "monster of commercialism" to articulate the fear of a "monster" in the context of "commercialism" (p. 649). Savage's concept of the Frankenstein Monster was different from Sterrenburg's later concept of a "revolutionary monster." Both Savage's concept of a "monster of commercialism" and Sterrenburg's concept of a "revolutionary monster" satisfied Saussure's principle of invariability since they used the (Frankenstein) "Monster" in order to express fear of a disruption in the social order. Both concepts were part of the cluster of concepts that postulated different forms of the Frankenstein Monster but were connected through the underlying invariable theme—a disruption of the social order—and expressions of fear.

The function of the myth from the late twentieth century to the early twenty-first century may demonstrate that myths like the Frankenstein Myth endure since they express dire consequences on a macro level (global scale). In this period, the expressions of the fear of biotechnological processes seeped into discourse about their consequences on health, global

environment, and the world economy. The authors discussed GMFs as a disruption or a perversion of the natural order and their ill effects on human health and the global environment. Given Ferrell's ideas that myth's emotive power connects the abstract to reality through fears or hopes, the Frankenstein Myth's endurance was incumbent upon the extent to which these expressions of fears connected the abstract to reality. Klee's (1999) and Gerstel's (2002) discussions of GMFs represented a snapshot of the concepts that helped create the fear of Frankenstein foods. Their discourse reflected fears about the fusion between the natural and the unnatural (food and technology).

Similarly, concepts in the early twenty-first century connected fear to consequences on a global scale. In this period's discourse, the authors expressed fear of the consequences of "climate change," and "world famine" and position GMFs as the solution to "avoid a world famine." GMFs' connection with the theme Frankenstein Foods did not begin and end with the theme Frankenstein Foods. The theme of GMFs, due to its connection with the theme of Frankenstein Foods, inherited the meaning of all the interconnected themes that arose from the Frankenstein Myth.

Altogether, the endurance of the Frankenstein Myth might be explained by the mythical themes' emotive power to connect the abstract to reality through fears and hopes. In addition, the mythical themes might have endured through their adaptability to shifting social contexts and through their resistance to change due to their constant connection to the Frankenstein Myth in the mythological system.

6.1.1 Methodological and theoretical challenges

The methodological and theoretical challenges of this study began with Frankenstein Foods' and GMFs' connection within the mythological system.

The methodological challenges were a) to explain and justify the material (GMFs) among the immaterial (themes) within a mythological system; and b) to explain the historical gaps within the mythological system. The theoretical challenge was to apply Saussure's (1916/1972) *linguistic-semiotic* system within the mythological system in order to examine the mythical themes.

With the exception of the theme GMFs, all the mythical themes and their connection to the Frankenstein Myth are abstractions. From Saussure's (1916/1972) perspective, linguistic signs must ultimately signify the physical and rest "ultimately upon concrete entities" (p. 137). However, since Saussure's theory of *variability* and *invariability* operates within a linguistic-semiotic system, the theory does not sufficiently account for the immateriality of the mythical themes. In addition, if the mythical themes in the mythological system ultimately represented material objects, such as GMFs, then the application of Saussure's theory within the mythological system does not sufficiently account for the mythical themes' endurance, which is contingent upon the their variable and invariable nature. Most of the mythical themes' abstract nature secures their connection to the Frankenstein Myth, for they are not founded upon anything in the known world. For example, the Frankenstein Paradox and the Frankenstein's Monster do not necessarily find their roots "ultimately upon concrete entities" or physical objects. The *concepts* (according to Barthes, 1972) of the Frankenstein Paradox and the Frankenstein Monster are incomprehensible and both have no physical referents. The idea of the Frankenstein Monster is incomprehensible, for the creature is a concept derived from distorted ideas, and as such, its creation, that is, an assemblage of dead limbs, cannot be associated with anything that exists. Subsequently, the creature is conventionalized, and as such bears no parallel to any natural

experience—the idea of the monster's creation and physical descriptive becomes determined exclusively by culture and takes different forms and representations of intangibles.

In the context of attempting to construct an illustration of pure intangibles, GMFs' connection to Frankenstein Foods is a complication in the mythological system. Only within Saussure's linguistic-semiotic system will a signifier ultimately refer to something accessible to the senses, or tangible. GMFs are material elements in the form of biotechnological creations, and as such, are peculiar among the mythical themes. The peculiarity of GMFs in the system arose from the fact that the mythical themes function within a unified interconnected system due to their abstract nature. GMFs are not abstract in nature, but the *concept* of GMFs holds two meanings, namely, a) as a theme, that is, immaterial or abstract, due to its connection to the term "Frankenstein foods" and b) as material, due to its biotechnological nature. Thus, GMFs' place among the mythical themes is justifiable as an abstract concept that was identifiable with the Frankenstein Myth, the Frankenstein Paradox, and the Frankenstein Monster.

The model also poses a theoretical challenge in that the mythical themes' unified and interconnected foundation of concepts referred back to its original signification, the Frankenstein Myth. The enduring nature of the mythical themes facilitated each theme's cluster of concepts to be redefined and recycled in any era, giving each theme an appearance that each functioned autonomously from its original source—the Frankenstein Myth—within the system.

Overall, the theoretical challenge was to construct a mythological system and categorize mythical themes that were not only abstract but also to some degree were mutually exclusive. For example, the concept of the Frankenstein Monster is in and of itself a *life-within-death-paradox*, that is, the Frankenstein Paradox. Although the mythical themes' apparently

contradictory features of changeability, stability, and unity became evident in their varied expressions of fear across several epochs, the analysis presented a coherent mythological system.

However, further refinement of the mythological system is necessary to show concepts that substantiate the mythical themes, especially between Frankenstein Foods and GMFs. The concepts and mythical themes illustrated within the mythological system have historical gaps and are not in strict chronological order. The examples in the system provide conceptual connections to social reality and are not a linear historical account. The historical gaps occurred because the mythological system did not draw concepts from artistic representations of the Frankenstein Myth, such as magazines, comics, and films. From the late nineteenth century to the late twentieth century, these artistic representations showed varied modifications to the novel's literary conventions.[10] The mythological system required and applied concepts outside artistic and fictional representations of the Frankenstein Myth, namely, concepts from the non-fictional genres that anchored the novel *Frankenstein* and the Frankenstein Myth within social reality.

Nevertheless, the mythological system provides a sufficient web of concepts to postulate the complex origins of the public's negative attitudes towards Frankenstein foods and GMFs. In addition, there are sufficient concepts within the mythological system to hypothesize about their ideological interrelation and their meaningful connection to the Frankenstein Myth.

6.1.2 Future research

The underlying theory and methodology presented in this study may be useful in explaining the endurance of other myths. A larger or more abstract mythological system could offer more general insight into how myths (abstractions) connect to sociocultural reality across

[10] See Appendix A for list of magazines and films in the period and a brief summary.

several epochs. This research may inspire future researchers to explore how myths are collectively subsumed into culture. Such an exploration might reveal how society collectively agrees upon the meaning of myths, and how myths become culturally significant within the social consciousness. An examination of myths' cultural significance might reveal how myths are sustained as ideologies through interconnected communicative systems, namely through language (oral and verbal). As such, future researchers may be inspired to trace interrelated ideologies as they form patterns and transit across time. The construction of a mythological system might help researchers trace these interconnected systems of ideas (ideological patterns) that reveal how myths, and not just scientific facts, influence public opinion.

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Appendix A

The following list was gathered from Glut (1984): There are genre spin offs in horror, comedy, animation, soft-core porn, and science fiction.

Magazines:

- *Castle of Frankenstein Yearbook*
- *The Journal of Frankenstein*

Universal Pictures:

- *Frankenstein* (1931)
- *Bride of Frankenstein* (1935)
- *Son of Frankenstein* (1939)
- *House of Frankenstein* (1944)
- *The Ghost of Frankenstein* (1942)
- *Frankenstein meets the Wolf Man* (1943)
- *Abbott and Costello meets Meet Frankenstein* (1948)
- *The Curse of Frankenstein* (1957)
- *The Revenge of Frankenstein* (1958)
- *The Evil of Frankenstein* (1964)
- *Frankenstein Created Women* (1966)
- *Frankenstein Must be Destroyed* (1969)
- *Andy Warhol's Frankenstein* (1973)

Hammer Films:

- *The Horror of Frankenstein* (1970)

- *Frankenstein and the Monster from Hell* (1972)

20th Century Fox:

- *Young Frankenstein* (1975)

International:

- *Spanish/West German El hombre que vino de Ummo* (1970)
- *Blackenstein* (1972)
- *French Les experiences erotiques de Frankenstein* (1972)
- *Italian La figlia di Frankenstein* (1972)
- *The Spanish El espiritu' de la colmena* (1973)

Comic book series:

- "In December 1945, *Classic Comics* (later to become *Classics Illustrated*) devoted its 26th issue to a straightforward adaptation of Mary Shelley's *Frankenstein*" (Glut, 2002, p. 184).
- "In the early 1950s the original Frankenstein Monster appeared in in *Marvel Tales* number 96 (June 1950) in "The Return of the Monster," illustrated by Syd Shores, who drew the character with pointed ears, fangs and claws" (Glut, 2002, p. 185).
- *Frankenstein* 1950s by Dick Briefer.

Books:

- *The Frankenstein Legend: A Tribute to Mary Shelley and Boris Karloff* by Donald F. Glut.

Spin offs/influences:

- *Invasion of the Zombies* (1961)
- *Night of the Living Dead* (1968)

Cartoon:

- The monster as a character in *Famous Adventures of Mr. Magoo* (1965)
- Hanna-Barbera's *Frankenstein Jr. and the Impossibles* (1969)

The Frankenstein Monster in Early Films

During the advent of Film, the abstract nature of the Frankenstein monster reinforced the Frankenstein myth's perpetuation and relevance in popular culture. In this period (1850-1975), Film's visual "concept" of the monster transcended both magazines' and comics' graphic representations. It connected to the Frankenstein Paradox since the monster represents a perversion of the natural and social order.

In the United States, the first *Frankenstein* film appeared in 1910 through the Thomas Edison's film company: *Frankenstein* (1910) and then *Life Without Soul* (1915). Europe's first film appeared in 1920, entitled, *Il Mosto di Frankenstein* (1920) ("The Monster of Frankenstein") produced and distributed by the Albertini Film Production Company (according to Glut, 1984).

In general, these early films depicted the creature's birth from unnatural processes. The creature's birth was the result from man's inquiry into the knowledge of life and death. For example, the film *Frankenstein* (1910) showed the results of man's inquiry into life and death and provided a cinematic demonstration of the monster's birth. Glut (1984) commented on the variation of the film's plot that made the monster's birth such a spectacular production: "The Monster comes to life in a cauldron of blazing chemicals" (p. 172). The film's portrayal of how

the “monster comes to life” is a “concept” that links to the paradox since it represents a disruption of the natural order and the result of scientific inquiry into the knowledge of life and death.

These films were examples of varied *concepts*, adaptations, and interpretations of the monster over successive generations. The Frankenstein monster’s cinematic representation became possible through its pliable and abstract nature.