THE NUTTY PROFESSOR – FROM JULIUS KELP TO SHERMAN KLUMP:

A TEXTUAL ANALYSIS OF SCIENCE AND SCIENTISTS IN TWO POPULAR FILMS

by

BEVERLY D. HARVEY

(Under the Direction of Jay Hamilton)

ABSTRACT

This thesis examines the representation of science and scientists in two popular Hollywood films of the same title – *The Nutty Professor*. One version was released in 1963, starring Jerry Lewis, and the other was released in 1996, with Eddie Murphy. This study is a textual analysis with an emphasis on the "how" of representation within the two films, which serve as cultural artifacts of their respective time periods. In an attempt to gain a more in-depth understanding of the chosen representations of science and scientists in both films, I also study the historical context of the periods surrounding the production and release of each film. One goal of this thesis is to note any changes or similarities in the representation of science and scientists between the two films, which were produced and released more than thirty years apart.

INDEX WORDS: representation; textual analysis; popular culture; film; Hollywood

THE NUTTY PROFESSOR – FROM JULIUS KELP TO SHERMAN KLUMP: A TEXTUAL ANALYSIS OF SCIENCE AND SCIENTISTS IN TWO POPULAR FILMS

by

BEVERLY D. HARVEY

B.A., Florida Atlantic University, 1999

A Thesis Submitted to the Graduate Faculty of The University of Georgia in Partial Fulfillment of the Requirements for the Degree

MASTER OF ARTS

ATHENS, GEORGIA

2006

THE NUTTY PROFESSOR – FROM JULIUS KELP TO SHERMAN KLUMP:

A TEXTUAL ANALYSIS OF SCIENCE AND SCIENTISTS IN TWO POPULAR FILMS

by

BEVERLY D. HARVEY

Major Professor:	Jay Hamilton
Committee:	Carolina Acosta-Alzuru Dwight Brooks

Electronic Version Approved:

Maureen Grasso
Dean of the Graduate School
The University of Georgia
December 2006

DEDICATION

Without hesitation, I sincerely dedicate this thesis to my son, Alexander, and to my parents, Hubert F. Harvey and Charlene F. Harvey.

My son is a wonderful soul, who teaches me far more than I will ever teach him. Throughout my work on this thesis, no one sacrificed more than my son, who had to share me – his one and only mother – for more than a year with seemingly countless scholarly articles and library books, and a laptop computer. All those nights of playing in the bathtub while I sat beside you reading articles and books, or nights you spent watching *SpongeBob Squarepants, The Adventures of Jimmy Neutron, Boy Genius,* and numerous other cartoons on television as I sat next to you working on the computer were not in vain, my son. I promise you that – and much more. The "future" is closer now than ever before.

I also dedicate this thesis to my beloved parents. My mother was one of the funniest people I have ever known, and my father was one of the kindest. My parents helped me begin my college career more than twenty-five years ago, and, in many ways, they have helped me get this far in my education. Even though my parents were looking down on me from Heaven throughout my work on this thesis, their presence – and eternal love and support – were always felt. And, for that, I am most grateful.

ACKNOWLEDGEMENTS

First of all, I would like to thank God and the academy, which seems only fitting for a thesis based on two Hollywood films. I thank God for instilling in my soul the passion that drives me, especially in my academic career, and for the wisdom and focus to never lose sight of my passion in life.

In this case, "the academy" refers to the school of life, where I have had some formidable teachers and tough lessons over the years. I must say, however, that I have learned more from my enemies and the adversity I have faced than any best friend or blissful times could ever come close to teaching me. Overcoming the adversity and ignoring the naysayers in my life, especially in the past four years, have made my academic achievements that much sweeter. More importantly, it has taught me that love is the greatest definer of all people, no matter how difficult they seem to be.

I would also like to thank the members of my thesis committee. My major professor, Dr. Jay Hamilton, who always had encouraging words to say to me and smiley faces to include in his e-mails, especially toward the end, which is when I needed them the most. Despite the personal challenges I faced during the creation of this thesis, Dr. Hamilton never wavered from his support and guidance. And thanks are also in order for my committee members, Drs. Carolina Acosta-Alzuru and Dwight Brooks, who never once asked how long it would take me to finish and were only too happy to stick it out with me, no matter what.

TABLE OF CONTENTS

CHAPTER 1

INTRODUCTION

Scientists are a curious lot. As a reporter at a small daily newspaper, I have had the opportunity to meet a few. I once interviewed the leading researcher at a USDA aquatic animal health research lab for a story about how he and two other scientists had discovered a cure for two catfish diseases that cost the catfish farm industry millions in losses each year. I talked with the lead researcher – a microbiologist – in his office for about an hour and then toured several of the buildings that housed fish tanks filled with current and future research subjects.

Later that same day, one of the newspaper's photographers stopped by the USDA lab to take pictures of the lead scientist and another scientist involved with the catfish research. When I first viewed the photographs, I immediately noticed something interesting – the two men were wearing white lab coats as they stood next to a fish tank filled with catfish. At no time during my extended visit did I ever see the lead researcher, or anyone else at the facility, sporting a lab coat. By wearing the lab coats these men were providing an image to the readers that screamed – scientists! In fact, the white lab coats spoke volumes about their profession and role in society. And, no doubt, the majority – if not all – of the newspaper's readers were able to identify the men as scientists based solely on the lab coats.

Although many people have never met a scientist, they are able to recognize images of scientists and science portrayed in the media (Basalla, 1976; Flicker, 2003). The majority of images, however, are not based on real scientists. Instead, images of scientists in the media, including novels and popular films, are largely based on fictional characters such as Dr. Jekyll and Dr. Frankenstein (Haynes, 1994). Moreover, the media have been accused of presenting negative images of science and scientists (Nisbet et al., 2002), and blamed for promoting public distrust and heightening risk perceptions of scientific processes and institutions (Frewer, 2003).

This can pose a problem given the fact that most people get their information about science, which includes technology, health, and environmental issues, from the media (Krieghbaum, 1967; Pfund and Hofstadter, 1981; National Science Board, 1996). Indeed, the public is very interested in science and turns to the media to stay informed about scientific issues, "especially science that is new and controversial" (Rogers, 1999: p. 180; see also Nelkin, 1995; National Science Board, 1996). Moreover, Nisbet et al., (2002) argue that after high school and college, "the media become the most available and sometimes the only source for the public to gain information about scientific discoveries, controversies, events and the work of scientists" (p. 592; see also Withe, 1962; Krieghbaum, 1967). In addition, other outlets of scientific information such as science museums and science classes do not come close to providing the amount of access or audience exposure to scientific information as compared to mass media sources (Nisbet et al., 2002).

Add to that the fact that science issues have become more serious and complex over the years, and can impact millions of lives. Today, science is ubiquitous and

inescapable. Our society has become so dependent upon science that it would be impossible to go a day without being touched by something produced, hawked, or invented by the field of science (Krieghbaum, 1967; Gardner & Young, 1981; Dunbar, 1995). For many people, however, science is both a boom and a bane. The wonders of science have given us ballpoint pens, pantyhose, computers, seedless watermelons, and Tang breakfast drink. Science has also given us atomic bombs, nuclear power plants, test-tube babies, cloned farm animals, and genetically modified foods. But, as Rogers (1999) notes, "[M]ost of us are not likely to have much direct experience with such things as cloning, global warming, or endangered species" (p. 181). As a result, the media play a key role "in shaping the public's view of scientific or biomedical innovations and their implications" (Pfund and Hofstadter, 1981, p. 145).

The issue of the public understanding of science is one reason scholars consider images of science and scientists found in popular culture – including magazines, television, advertisements, films, cartoons, rock music, and comic books – worthy of academic study (Basalla, 1976; Nelkin and Lindee, 1995; Allan, 2002; Flicker, 2003). The manner in which people understand and perceive science can drive consumer behavior (Nelkin, 1995), as well as dictate public policy (Cronholm & Sandell, 1981; Nelkin, 1995; Nelkin and Lindee, 1995) and determine which areas of scientific research receive funding (Goodell, 1975; Dunbar, 1995; Frewer, 2003). How science and scientists are represented in the media can also affect the number of elementary school and secondary school students who become interested in science as a career (Beardslee & O'Dowd, 1962), especially girls (Mead & Metraux, 1957; Steinke, 1997). Disinterest in

science as a profession is a critical consideration given the ongoing worries about a scientist shortage in the United States (Hirsch, 1962; C-SPAN2, 2006).

Entertainment media such as popular films and television programs are regular contributors to the production of images of scientists and science in society. Scriptwriters frequently borrow science topics and issues from the headlines to include in storylines. Science lends a degree of plausibility to characters and plots in films, especially science fiction (Locke, 2005). Science topics are also recognizable by many audience members who, for example, are already familiar with the atomic bomb prior to seeing the movie *Dr. Strangelove, or How I Learned to Stop Worrying and Love the Bomb*, or know a bit about DNA before viewing *Jurassic Park*. Maugh (1978) argues, however, that scriptwriters "have a uniform lack of scientific background. … [W]hich is why we have such spectacular – albeit nonsensical – dogfights in space in the movie *Star Wars*" (p. 37). Such errors, Maugh (1978) continues, "give the lay public a warped sense of science" (p. 37).

Lacey (1998) argues that unlike television, which relies more on words to convey a message, film uses the image as "the prime provider of information, even overriding that of the dialogue" (p. 30). The development of images is a product of the culture in which they are developed (Boulding, 1977). Films are also cultural artifacts of the culture in which they are produced, which can include a society's tensions, fears, and anxieties (Weart, 1988; Boggs, 2001). Such cultural communications have the potential to span the globe. Films, more specifically popular feature films produced in Hollywood, have a worldwide distribution and a large audience. Boggs (2001) argues, "Hollywood has become a major center of … cultural exports" (p. 359). Outside of movie theaters,

films have become even more accessible to a greater number of people through the use of videocassettes, DVD's, and television, especially on cable TV networks.

Despite the label of "low culture" or "low art" often associated with popular forms of media – including Hollywood films – a number of scholars have found academic merit in the study of such texts (Nelkin and Lindee, 1995; Locke, 2005). Moreover, in their research on the gene as a cultural icon, Nelkin and Lindee (1995) found that images of genetics were similar in both high culture and low culture – from fine art to soap operas. And in his study on the representation of science and technology in super-hero comics, Locke (2005) argues that comics "are one cultural arena where the public meaning of science is actively worked out" (p. 25). I argue that films – more specifically, popular feature films produced in Hollywood – are also active participants in the cultural communication of the ideology of science.

Purpose of Study

I became intrigued with the subject of my thesis while watching the film *Back to the Future*. Christopher Lloyd plays the character Dr. Emmett Brown, an absent-minded, independent scientist who is obsessed with the concept of time, and Michael J. Fox plays a high school kid, Marty McFly, who travels to the year 1955 in a time machine Dr. Brown built from a DeLorean. The movie came to the scene during the lightning storm where Dr. Brown and Marty are racing to get Marty back to the year 1985. As Dr. Brown frantically looked around during one part of the scene, his white shock of hair and wide-eyed look reminded me of Albert Einstein. It was at that moment that I began to think about how scientists in popular culture are often based on the eccentric look and

mythical reputation of Einstein. I then began to wonder about the reasons behind this phenomenon. Despite decades of medical breakthroughs and scientific advances, it seemed that the representation of scientists seen in popular media had stood still. Moreover, why is a profession so highly revered by society (National Science Board, 1996) so lowly regarded in representations found in popular media? It seemed like such a strange paradox to me.

This thesis examines the representation of science and scientists in two popular Hollywood films of the same title – *The Nutty Professor*. One version was released in 1963, starring Jerry Lewis, and the other was released in 1996, with Eddie Murphy. This study is a textual analysis with an emphasis on the "how" of representation (Hall, 1997a) within the two films, which serve as cultural artifacts of their respective time periods. In an attempt to gain a more in-depth understanding of the chosen representations of science and scientists in both films, I also study the historical context of the periods surrounding the production and release of each film. One goal of this thesis is to note any changes or similarities in the representations of science and scientists between the two films, which were produced and released more than thirty years apart.

CHAPTER 2

LITERATURE REVIEW

In order to gain a broader understanding of my thesis topic, I studied both non-science and science-related scholarly articles on representation. As a result, I discovered that there is a wealth of literature that examines and discusses how various people, places, and things in American society are represented in a broad range of mass media – from antebellum songs (Dates & Barlow, 1993) to "white-trash" cookbooks (Sheldon, 2005). The non-science literature that I reviewed for this thesis examined the representation of: race/ethnic groups – Asian Americans (Marchetti, 1991; Jiwani, 2005), Hispanics (Jenrette et al., 1999; Johnson, 1999), blacks (Winokur, 1991; Dates & Barlow, 1993; Pounds, 1999; Chaney, 2004; Gates, 2004), Italian Americans (Cavallero, 2004); occupations – lawyers (Rafter, 2001; Thain, 2001), psychologists (Scharf ,1986); and gender (Hoerrner, 1996; O'Brien, 1996; Inness, 1998; MacKinnon, 2003). Scholars have also studied mass media representations of mental illness (Wahl, 2003; Zimmerman, 2003; Lawson & Fouts, 2004), senior citizens (Gerbner et al., 1980; Loetterle, 1994), disabled persons (Smit & Enns, 2001), baseball (Dickerson, 1991), the South (Dunne, 2004), and even the food that contemporary American working class families put on their plates (Sheldon, 2005).

The science-related literature covered a much more limited range of representations, of course, focusing exclusively on science and scientists found in various

forms of media: comic books (Basalla, 1976; Gresh & Weinberg, 2005; Locke, 2005), novels (Haynes, 1994), magazines (LaFollette, 1983, 1988, 1990), general television (Gardner & Young, 1981; LaFollette, 1982; Allan, 2002), children's television (Potts & Martinez, 1994), and popular films (Weart, 1988; Goldman, 1989; Ingram, 2000; Flicker, 2003). The majority of scholars studied specific areas within the two categories of science and scientists: gender/women scientists (LaFollette, 1988; Steinke, 1997; Flicker, 2003), popular culture/popular science (Handlin, 1965; Basalla, 1976; Nelkin & Lindee, 1995), students' views of scientists and science (Mead and Métraux, 1957; Beardslee & O'Dowd, 1962; Rahm & Charbonneau, 1997), science fiction (Hirsch, 1962; Tonsor, 1976), mad scientists (Tudor, 1989; Toumey, 1992), genes/genetics (Nelkin & Lindee, 1995; Van Dijck, 1998), nuclear energy/nuclear issues (Weart, 1988; Ingram, 2000). Several scholars examined images of scientists found in mass media, without focusing on any one particular area (e.g., Hirsch, 1968; Goodell, 1975; Maugh, 1978; Lewenstein, 1995; Nelkin, 1995). A few studies also examined how media images influenced public perceptions and beliefs about science and scientists (e.g., Potts & Martinez, 1994; Nisbet et al., 2002).

Although this thesis is based on Hollywood feature films, I also examined non-science and science-related scholarly studies on representation in other media, including comic books (Basalla, 1976), television (Chaney, 2004), magazines (LaFollette, 1983), print advertisements (Loetterle, 1994), newsreels (Johnson, 1999), cookbooks (Sheldon, 2005), and newspapers (Scharf, 1986), which, like mainstream movies, are each part of popular culture and have the potential to influence large audiences. Such cross-media study, particularly of scholarly research regarding change in representation over time, is

important in terms of this thesis based on the fact that the major producers of cultural texts in America have increased and varied since the late 1700s – from popular plays to public relations (Dates & Barlow, 1993).

Moreover, scholars (e.g., Weart, 1988; Dates & Barlow, 1993) note that many of the representations of people, places, and things now seen in films actually began in other popular cultural arenas and mass media sources. Thus, I argue, studying other media sources can provide insight as to the "how" and "why" behind the representation of science and scientists in contemporary Hollywood films. In their study on the representation of blacks from early 1800s antebellum literature and theater in England and the United States to early 1990s mass media sources such as music, television, and films, Dates and Barlow (1993) argue that "by tracking … images … over time and across the various media strategically involved in the production and distribution of those images, we can pinpoint their common characteristics and sources, [and] the ways in which they evolved" (p. 5).

The vast majority of non-science and science-related literature that I examined used the term "image" instead of, or in addition to, "representation." At times, the word "image" is used alone to refer to depictions of people, places, or things as actual or mental pictures (e.g., Mead and Métraux, 1957; Hirsch, 1968), which can also be considered as representations (Rose, 2001). Other times, the word "image" is used interchangeably with "representation" in reference to either pictorial depictions or symbols used in various media, including film (e.g., Weart, 1988; Haynes, 1994), to portray people, places, and things. Throughout this thesis, the two terms will also be used interchangeably.

Overview of Literature Review

This literature review examines the various ways in which representations of scientists and science have been studied and categorized. This chapter is divided into four sections: representation of scientists, representation of science, representation as stereotype, and representation as myth. The first section –representation of scientists – discusses student-focused studies, popular culture studies, and the evolution of the representation of scientists since the Middle Ages. The second section – representation of science – also includes student-focused studies and popular culture studies on the ways in which science has been regarded and portrayed in American culture. This section also discusses the images of science in popular film since the 1920s.

The studies based on students' images of and attitudes toward science and scientists are of particular importance for several reasons. Since Mead and Métraux published the pilot study in 1957, student-focused studies continue to be a popular area of research on the images and representations of science and scientists. The study was commissioned and administered by the American Association for the Advancement of Science in the late 1950s to determine students' attitudes toward science and scientists in hopes of ultimately getting more students interested in pursuing scientific careers, and is still often used and cited by scholars. Every academic level has now been examined by scholars – kindergarten (Chambers, 1983), elementary school (Perrodin, 1966), high school (Mead & Métraux, 1957), and college (Beardslee & O'Dowd, 1962; Schwirian & Thomson, 1972; Brush, 1979; Rahm & Charbonneau, 1997). Moreover, each of the related scholarly studies reviewed for this thesis had results that were similar to those seen in the pilot study written by Mead and Métraux in the late 1950s – even up to forty

years later (Rahm & Charbonneau, 1997). Furthermore, the Mead and Métraux (1957) study is also often cited by scholars in science-related studies that do not include any research whatsoever on students' images or attitudes of science and scientists (e.g., Hirsch, 1968; Basalla, 1976; LaFollette, 1990; Haynes, 1994). A number of those studies also have similar findings to those concluded by Mead and Métraux (e.g., Basalla, 1976; LaFollette, 1990).

The third section – representation as stereotype – discusses the definition of stereotype and outlines the various stereotypes of scientists. Although this thesis is not a study of stereotypes per se, it is helpful to look at this area of scholarly research given the fact that many representations of scientists in popular culture today are based on stereotypes that have existed since the Middle Ages (Haynes, 1994). The fourth section – representation as myth – outlines the myths of scientific difference between scientists and the rest of society. The myths are based on how scientists look, how scientists act, and scientists' intellects, as well as male vs. female scientists. As with stereotypes, the study of myths is not a part of this thesis; however, the scholarly studies add to the overall understanding of how science and scientists are represented in popular culture.

Representation of Scientists

The first-ever scholarly study on the images of scientists and science was based on the mental pictures and attitudes high school students had regarding the profession. Mead and Métraux (1957) analyzed 35,000 high school students' written responses to incomplete statements regarding various aspects of the (mental) image of the scientist. Students described a scientist as a middle-aged or elderly man (as opposed to a woman,

not as a reference to humankind), who wore eyeglasses and a white lab coat. The physical features of a scientist varied considerably – small, tall, stout, thin, bald, bearded, unshaven, unkempt, stooped, tired. The high schoolers also described a scientist as a man: whose work is "uninteresting, dull, [and] monotonous;" who has no social life or hobbies; who "may use himself as a guinea pig," and who "can only talk, eat, breathe, and sleep science" (Mead & Métraux, 1957, p. 387). "He spends his days indoors, sitting in a laboratory, pouring things from one test tube into another" (Mead & Métraux, 1957, p. 387). He also "neglects his family," "has no friends," and he "neglects his body for his mind" (Mead & Métraux, 1957, 387). Mead and Métraux (1957) concluded that the "official" image of science and scientists, overall, was quite positive; however, scientists were not considered to be prime marriage material by the girls, and science was not considered to be the ideal career objective by the boys.

Chambers (1983) built upon the Mead and Métraux (1957) study by developing and administering the Draw-A-Scientist Test to more than 4,500 children from kindergarten to fifth grade in Canada, the United States, and Australia. The majority of the children were asked to draw a scientist, while others (18.9 percent of the sample), members of the control groups, were simply asked to draw a person. Chambers (1983) used the students' responses from the Mead and Métraux (1957) study as the basis for a list of what he refers to as "indicators of the standard image of a scientist" (p. 258) to analyze the children's drawings in his study:

1. lab coat (usually, but not necessarily white);
2. eyeglasses;
3. facial growth of hair (including beards, mustaches, or abnormally long sideburns);

4. symbols of research: scientific instruments and laboratory equipment of any kind;
5. symbols of knowledge: principally books and filing cabinets;
6. technology: the "products" of science;
7. relevant captions: formulae, taxonomic classification, the "eureka!" syndrome, etc. (p. 258)

Chambers (1983) notes that the standard image is also "the picture inevitably drawn by adults who wish to convey graphically the concept of 'scientist'" and that "when asked to 'draw a scientist,' even scientists themselves utilize the standard image" (p. 256). Overall, Chambers' (1983) findings were similar to those in the Mead and Métraux (1957) study in that the same stereotypic images of scientists were drawn by the children, with the average number of indicators increasing significantly with grade level.

A study by Rahm & Charbonneau (1997) is a recent example of research that cites both studies – Mead and Métraux (1957) and Chambers (1983) – extensively. Rahm & Charbonneau (1997) administered the Draw-A-Scientist Test to university students. Forty years after the release of the Mead and Métraux (1957) study and more than a decade after Chambers' (1983) was published, apparently, nothing had changed. The university students' images of scientists were similar to those created by the children in Chambers' study, complete with wild hairdos, lab coats, facial hair, and eyeglasses. The study's results were "troubling" to Rahm & Charbonneau (1997), who noted that the sample consisted of well-educated adults who were "directly exposed" (p. 777) to academic scientists through a university environment. Rahm & Charbonneau (1997) state, "We can only conclude that the stereotypical image of the scientist, once it takes

hold at an early age (through television, movies, comic books, or whatever), remains" (p. 777).

By the early 1960s, scholars began to study representations of scientists found in popular culture. One of the first to study such images was Hirsch (1962), who examined the image of the scientist and its "fluctuations" in science fiction magazines from 1926 to 1950. The image of scientists in science fiction changed in two ways during the 24-year period of the study's sample – how scientists were represented and where scientists were seen conducting their work. By the late 1960s, Hirsch (1968) states:

> Typically, scientists are no longer depicted as either supermen or villains, but as real human beings who are facing not only technical problems but also moral dilemmas, and who recognize that science alone is not an adequate guide for the choices they must make. (p. 43)

The workplace location for scientists in science fiction also changed. Instead of working in an "independent" setting, which included college professors at universities, scientists were seen in "bureaucratic" settings (Hirsch, 1962, p. 265). Hirsch (1962) concludes that such changes in the images of scientists in science fiction "seem to indicate a reflection of actual historical and social trends, but the reflection is selective rather than mechanical" (p. 268). One reason for the transition to a more realistic representation of scientists could be attributed to the fact that scientists, at least during that time, were both the writers and readers of science fiction (Hirsch, 1962; Basalla, 1976). Hirsch (1962) notes "that science-fiction writers tend to be spokesmen for scientists and for the scientific ethos" (p. 264).

A number of scholars have expanded on Hirsch's research (e.g., Basalla, 1976; Locke, 2005). Basalla (1976) built upon it by studying the representation of pop scientists in other popular culture media – comic strips, comic books, television

programs, and feature films. The composite sketch of a "pop scientist" provided by Basalla (1976) is an older man, who wears eyeglasses and works in a laboratory. He is typically a chemist or physicist, maybe a biologist. His "standard uniform" is a white lab coat, which he wears everywhere – "at home, in a taxicab, or speaking before a scientific society" (Basalla, 1976, p. 267). His physical appearance can vary; he can be short and stout, tall and thin, bald or with an Einstein-inspired shock of hair. He is also "somewhat eccentric or [an] unpleasant individual who is ruled by logic and deficient in the human passions" (Basalla, 1976, p. 266). The pop scientist sometimes conducts his experiments in a "dungeon-laboratory" and "has difficulty relating to the women he encounters" (Basalla, 1976, p. 266). He can be portrayed as either good or evil, but he is rarely a hero. Basalla (1976) notes that his description of a pop scientist is very similar to the descriptions of scientists provided by the high school students in the Mead and Métraux (1957) study. Moreover, Basalla (1976) observes:

> Almost two decades have passed since the Mead-Métraux study was made, and during that time America has experienced some spectacular scientific and technological advances … . Despite all of this, the image of the scientists in popular culture has changed little. (p. 267)

Several scholars studied the representation of female scientists in popular culture (LaFollette, 1988; Steinke, 1997; Flicker, 2003). The manner in which women scientists are represented varies from that of male scientists in several significant ways. In her study on the portrayal of women scientists in feature films released from 1929 to 1997, Flicker (2003) concludes that women are not cast in cliché "mad scientist" roles and are not seen working in "hidden laboratories on dubious projects" (p. 316). Moreover, Flicker (2003) argues, "Female characters in feature films do not contribute to the build up of negative myths surrounding the image of science" (p. 316).

In *From Faust to Strangelove: Representations of the Scientist in Western Literature*, Haynes (1994) examines the evolution of the representations of scientists from the Middle Ages to the early 1990s. Haynes studied mainly Western literature, as well as a few plays, including British theater, and a number of Hollywood films. Haynes (1994) argues that when representations of scientists are studied chronologically "they achieve an additional historical significance both as ideological indicators of the changing perceptions of science over some seven centuries and as powerful images that give rise to new stereotypes" (p. 2). Haynes (1994) further states:

> Studying the evolution of representations of scientists in Western literature, and more recently in film, allows us to see how clusters of these fictional images have coalesced to produce archetypes that subsequently have acquired a cumulative, even mythical, importance. (p. 3)

Haynes (1994) argues that only a handful of real scientists – Isaac Newton, Marie Curie, and Albert Einstein – have influenced popular images of scientists. Instead, Haynes (1994) contends:

> [F]ictional characters such as Dr. Faustus, Dr. Frankenstein, Dr. Moreau, Dr. Jekyll, Dr. Caligari, and Dr. Strangelove have been extremely influential in the evolution of the unattractive stereotypes that continue in uneasy coexistence with the manifest dependence of Western society on its scientists. (p. 1)

Although the representation of scientists since the Middle Ages has evolved over time to include sinister alchemist, maniacal world destroyers, and environmental saviors, the "most enduring and influential images of the scientist in both literature and film has been that of Victor Frankenstein" (Haynes, 1994, p. 4; see also, Hirsch, 1962; Nisbet et al., 2002), the protagonist in the literary classic *Frankenstein*, written by Mary Shelley in 1816 and published in 1818. Shelley based her portrayal of Frankenstein, the doctor and his monster, on the political situation and scientific theories in France during the early

1880s, but it is still relevant today (Haynes, 1994). Moreover, one only has to watch children's television to discover that representations of maniacal and evil scientists are also still alive and well in today's society through cartoon programs such as *SpongeBob Squarepants*, with its technology savvy, crabby-patty loving Plankton, and *The Adventures of Jimmy Neutron, Boy Genius* that often pits Jimmy against Professor Calamitous in world-saving battles of scientific wits.

Representation of Science

At times it is difficult to separate the descriptions of the representations of scientists and science found in the literature into two distinct groups. Scientists can very well be seen as representatives of their respective science fields and for the profession as a whole. The representation of science, however, does have a number of its own unique characteristics – both physical and psychological. Perhaps the best place to start is, once again, with the student-focused studies, because, as with the representation of scientists, very little appears to have changed in the way in which science has been viewed and represented since at least the late 1950s.

In the Mead and Métraux (1957) study, science subjects mentioned by the students included chemistry and physics, which involved "laboratories, test tubes, Bunsen burners, experiments and explosions," as well as biology, botany, and zoology, which featured "microscopes, dissection, the digestive system, creepy and crawly things," and laboratory animals and plants (Mead & Métraux, 1957, p. 386). If a scientist worked in a laboratory – which "may be dingy" (Mead & Métraux, 1957, p. 387) – then he was:

> surrounded by equipment: test tubes, Bunsen burners, flasks and bottles, a jungle gym of blown glass tubes and weird machines with dials. The sparkling white

> laboratory [was] full of sounds: the bubbling liquids in test tubes and flasks, the squeaks and squeals of laboratory animals, the muttering voice of the scientist. (Mead & Métraux, 1957, p. 387)

Scientific instruments and lab equipment, referred to by Chambers (1983) as "symbols of research," (one of his seven standard indicators of a scientist) were drawn by even the youngest children in his Draw-a-Scientist Test's sample. Chambers (1983) notes, "Instruments and equipment were mostly chemical, especially in early years, but gradually more sophisticated items such as microscopes, telescopes and computers appeared" (p. 259).

Scientific laboratories and equipment were "glamorized" by magazine writers during the first half of the twentieth century as a way of making descriptions of science more interesting and accessible to readers (LaFollette, 1990). "Flames in Bunsen burners, rows of glistening glassware, crackling electronic equipment, and cluttered lab benches were popular subjects for science writers," as were chemistry labs, which "represented the archetype of the scientific environment" (LaFollette, 1990, p. 112). Van Dijck (1998) asserts, "The laboratory connoted either the sacred sanctuary of scientists, or represented to political activists a secluded bastion of power and arrogance" (p. 191). Moreover, university labs were perceived as "a public, scientific domain, where scientific knowledge can be freely pursued without any strings attached" (Van Dijck, 1998, p. 191).

The media, at least until the mid-1990s, presented science in terms of what it did and what it accomplished, and rarely provided information regarding the research process or societal implications (Handlin, 1965; Nelkin, 1995). Moreover, magazines and newspapers continued to portray science as "an arcane and incomprehensible subject … . And scientists still appear[ed] to be remote but superior wizards, culturally isolated from

the mainstream of society" (Nelkin, 1995, p. 14). In her content analysis of nonfiction articles on science in popular general-audience magazines published from 1910 to 1955, LaFollette (1979) asserts that science was constantly presented as "the true authority, possessing great power because of its results and knowledge" (p. xiii). Science was presented by the media as a drama, complete with action, suspense, and resolution (LaFollette, 1990; see also, Van Dijck, 1998). Science was "epitomized as America's greatest adventure, and scientists, its most altruistic heroes" (LaFollette, 1990, p. 111). Science also offered promises that it "could (and would) cure social problems and disease, and conquer time, space, even death" (LaFollette, 1979, p. xiii).

In their analysis of the representation of science in television documentaries, Gardner and Young (1981), argue that science is often portrayed as a mystery, with "talking head" (p. 177) scientists seen solving the puzzle by putting all the pieces together. The use of such conventions of television production gives scientific knowledge a "special status" (Gardner & Young, 1981, p. 178). Gardner and Young (1981) assert, "Science and its telling are synonymous with progress and convey a sense of authority and the advancing edge of objectivity. … It is positivist in that it privileges scientific knowledge above other forms of inquiry" (p. 178).

Images of science have been portrayed in popular films since the mid-1920s (Goldman, 1989). In his study on the images of science and technology in popular films from the mid-1920s to the mid-1980s, Goldman (1989) observes, "Given the persistent popular association of science and technology with social progress and personal well-being, it is startling to discover that in films since the mid-1920s they have been depicted

largely negatively" (p. 275). Goldman (1989) argues that the negative images are a result of "public anxiety" over the following issues:

1. The partnership between "science, technology, and corporate power;"
2. The complacency of government agencies and scientists toward new knowledge and artifacts;
3. The insensitivity of scientists toward the moral implications of their research and its applications; and
4. The co-option of technical knowledge by vested corporate and government interests (p. 275).

Moreover, Goldman (1989) contends that mad scientist films are an "articulation of a popular suspicion of people who devote their lives to discovering the unknown" (p. 289). After viewing hours of movies from *Aliens* to *Mad Max* to *Who Framed Roger Rabbit?*, Goldman (1989) concludes that the images of science seen in the films are "deliberately crafted to appeal to what were believed to be widely prevalent attitudes, values, and fears" that remained "pretty much the same" in his study's sample period (p. 289).

A number of scholars (Handlin, 1965; Basalla, 1976; Nelkin & Lindee, 1995; Van Dijck, 1998) have focused on the representation of science within the entire realm of popular culture, instead of in terms of just a specific source or mass communication medium. The biological specialty of genetics in popular culture in particular has been the subject of several representation studies (Nelkin & Lindee, 1995; Van Dijck, 1998). In *The DNA Mystique: The Gene as a Cultural Icon*, Nelkin and Lindee (1995) analyze the "folklore" behind the text and images of the gene in popular culture. The study includes a myriad of pop culture sources – jokes, movies, self-help books, supermarket tabloids,

songs, radio talk shows, magazines. Nelkin and Lindee (1995) found that as the science of genetics moved out of the laboratory and into popular culture it was "transformed" (p. 198). It was no longer a "string of purines and pyramidines" (p. 198). Instead, the gene had become a catch-all for society's needs and desires. Nelkin and Lindee (1995) argue, "[I]n the 1990s 'gene talk' has entered the vernacular as a subject for drama, a source of humor, and an explanation of human behavior" (p. 2). Genes became the likely explanation for every societal woe and whim – obesity, criminal behavior, shyness, intelligence, political preferences, and fashion taste (Nelkin & Lindee, 1995). The media touted the possibility that people's lives and fates were determined by coach-potato genes, selfish genes, gay genes, depression genes, genius genes, frugal genes, and sinning genes (Nelkin & Lindee, 1995). Geneticists have also been guilty of overstating the wonders of gene therapy and the powers of the gene, making promises that reflect "cultural beliefs about identity, family, gender, and race" (Nelkin & Lindee, 1995, p. 197). Nelkin and Lindee (1995) argue, "[T]he gene in popular culture, although it derives some of its power from the prestige of science, is not limited by scientific data. As a cultural icon, its meanings mirror public expectations, social tensions, and political agendas" (p. 193).

Representation as Stereotype

Representation is frequently achieved through the use of stereotypes that are found in every area of media from cartoons (Seiter, 1986; Templin, 1999) to film (O'Brien, 1996; Hoerrner, 1996) to soap operas (Seiter, 1986; Jenrette et al., 1999). Stereotypes are used to label and identify various categories of people – such as nationalities, races, classes,

genders, and occupations – in typically negative ways (O'Sullivan, 1994; Berger, 2000) and are an expression of a dominant ideology (Lacey, 1998). Lacey (1998) argues, "Stereotypes are not true or false, but reflect a particular set of ideological values. … The degree to which a stereotype is accepted as being 'true' or not is dependent upon an individual's knowledge of the group in question" (p. 139).

Stereotypes have also been defined in semiotic-related terms by scholars. Hall (1997b), for example, refers to stereotyping as a "signifying process" that "reduces people to a few, simple, essential characteristics, which are represented as fixed by Nature" (p. 257). O'Sullivan (1994) defines stereotypes as "highly simplified and generalized signs" (p. 299) used for certain groups of people. O'Sullivan (1994) argues, "In short, [stereotypes] operate to define and identify groups of people as generally alike in certain ways – as committed to particular values, motivated by similar goals, having a common personality, make-up and so on" (p. 300).

Stereotypes are socially constructed "short cuts" to meaning (Lacey, 1998) that often serve a practical purpose in film and television. In her study on images of Mexicans used in U.S. newsreels from 1919 to 1932, Johnson (1999) calls stereotypes "media shorthand," which, she argues, "helped make media consumption effortless" (p. 430) for audiences. Indeed, stereotypes serve a somewhat useful purpose for television and film viewers. Using New York City as an example, Lacey (1998) states, "Having stereotypical knowledge about New York is more useful for audiences watching a news story about the city or a feature film set there, than having no knowledge at all" (p. 135).

As with many things based on societal and cultural whims, stereotypes are subject to change over time (Jenrette et al., 1999; Calvallero, 2004). But change is not always

good nor does it equate better. New, equally negative stereotypes are often simply added to old, hackneyed stereotypes (Weart, 1988; Jenrette et al., 1999). For example, in their study on the changing images of Hispanic female characters in soap operas, Jenrette et al. (1999) argue that preexisting negative stereotypes of Hispanic Americans portrayed in film and on television as "bandits or Latin Lovers" (p. 38) changed to three new negative stereotypes in the 1980s – the "funny Hispanic," the "crooked Hispanic," and the "Hispanic cop" (p. 38) – and were expanded in the 1990s to include three new female stereotype roles as victims, losers, and troublemakers. Jenrette et al. (1999) conclude, "As in real life in the U.S., Hispanic-American women have been marginalized on soaps" (p. 39).

Stereotypes of scientists in general and stereotypes of female scientists in particular have been the focus of research for a number of scholars (Hirsch, 1968; Weart, 1988; Nelkin, 1995; Rahm & Charbonneau, 1997; Locke, 2005). In *From Faust to Strangelove*, Haynes (1994) examines representations of scientists in literature, plays, and films from the Middle Ages to the early 1990s. Haynes (1994) groups fictional scientists – "from the medieval alchemist to the modern computer programmer, atomic physicist, or cyberneticist" – into six recurring stereotypes:

1. The alchemist – often portrayed as "obsessed and maniacal," who has been transformed to the modern-day "sinister biologist producing new … species through … genetic engineering" (p. 3);
2. The stupid virtuoso – who "at first appears more comic than sinister," whose contemporary counterpart is the absent-minded professor found in twentieth-century films (p. 3);

3. The unfeeling scientist – which is the "most enduring stereotype of all and still provides the most common image of the scientist in popular thinking, recurring repeatedly in twentieth-century plays, novels, and films" (p. 3);
4. The heroic adventurer – a "superman" who explores new territories or new concepts, is often featured in comic books and space adventures during "periods of scientific optimism," and is quite popular with adolescent audiences (p. 3);
5. The helpless scientist – who has lost control over his discovery like Dr. Frankenstein's monster, or has lost control over the use of his research, which "frequently happens in wartime" (p. 4); and
6. The scientist as idealist – who "represents the one unambiguously acceptable scientist," "frequently engaged in conflict with a technology-based system that fails to provide for individual human values" (p. 4).

Haynes (1994) notes, "The majority of these stereotypes (as well as the overwhelming majority of individual characters) represent scientists in negative terms" (p. 4). Implied in Haynes' six stereotypes is that the scientists are all men. Indeed, she uses the male pronouns "he" and "his" repeatedly throughout the descriptions. Perhaps this is a version of what Haynes (1994) terms "sexist stereotyping" (p. 317) of scientists by the media and society.

Female scientists have their own particular set of stereotypes. Flicker (2003) examined women scientists portrayed in feature films released from 1929 to 1997 across all genres "entertainment, romance, drama, action, science fiction, horror, etc." (p. 309). Flicker (2003) viewed a total of fifty-eight popular films, the vast majority (forty) produced in the United States – from *A Nightmare on Elm Street 3: Dream Warrior* to

Yentl – that each included at least one woman scientist/science scholar. Flicker (2003) clusters depictions of women scientists seen in films into six stereotypes:

1. The old maid – married to her work, typically wears eyeglasses, old-fashioned style, "femininity *and* intelligence" portrayed as "mutually exclusive characteristics" (p. 311, italics hers);
2. The male woman – often found in science fiction and action films, member of an all-male team, but inferior to her colleagues, "smokes, drinks, takes pills," (p. 311);
3. The naïve expert – extremely good looking, "naiveté and feminine emotions get her into some difficulty" (p. 312), needs a man's help to get her out of trouble;
4. The evil plotter – beautiful and crafty, "corrupt and uses her sexual attraction to trick her opponent," "even the cleverest male scientists fall into her trap" (p. 313);
5. The daughter or assistant – socially linked to a "classic cliché" male scientist, in 1950s and 1960s films "the main task of the assistant comprises solely [in] the sexual assistance she provides to the professor," "her work place is limited to the bed" (p. 314); and
6. The lonely heroine – found in more recent films, she "has outstanding qualifications and her competence outclasses the men" (p. 315), but she is not recognized professionally by her male counterparts.

Flicker (2003) argues that stereotypes such as the lonely heroine, while not entirely flattering to women scientists, do "portray social reality" (p. 316; see also, Steinke, 1997). Flicker (2003) states, "Women still commonly stand in the second ranks of the

scientific world, not because they are less qualified, but rather, because of strategic marginalization" (p. 316).

Indeed, such stereotypical, discriminatory images of women scientists parallel many of the perceived views of the scientific community. Morse (1995) argues, "Science has historically been the domain of men. Men have largely determined what gets studied, which technologies are developed, and how science dollars are spent. Though women have always played a part in science, until recently their impact on the discipline's mainstream was minimal" (p. 1). Women scientists tend to remain on the "outer circle" of the scientific community; they are often the victims of gender discrimination and, as a result, are denied promotions, research funding, and academic tenure (Sonnert, 1995; Yentsch & Sindermann, 1992). Women who are successful scientists are viewed as failures on the domestic front, and women who chose family over career suffer professionally as a result (Sonnert, 1995). Women scientists are either accused of conducting "nonscience" research or of being "nonfeminine" (Corbett, 2001, p. 720).

Representation as Myth

Several myths surrounding the representation of science and scientists were discussed in the reviewed literature. Although none of the scholars define the term "myth," the manner in which each applies the word is as a cultural falsehood or untrue story. All of the myths are based on differences between scientists and other members of society in terms of how scientists look, how scientists act, and scientists' intellects, as well as male vs. female scientists. At least one myth is challenged. In her study of the PBS science program *Discovering Women*, featuring real women scientists, Steinke (1997) concludes,

"[T]he frequent use of images of the women scientists in research laboratories and out in the field dispel the myth that science is a career that requires masculine traits and attributes" (p. 423).

More often than not, however, scholars argue that myths of scientific difference are created or reinforced by media representations of real (e.g., LaFollette, 1990) and fictional scientists (e.g., Hirsch, 1968). In her study on written and visual images of scientists in popular magazines published from 1910 to 1955, LaFollette (1990) argues that writers "constantly celebrated a myth of scientific differentness" (p. 67). LaFollette (1990) notes, "When they were not in their laboratories, these scientists in fact looked, dressed, and acted like other members of their local communities or socioeconomic class" (p. 66). In essence, LaFollette declares that if one were to walk down the street, odds are it would be virtually impossible to pick out the scientists from the nonscientists based solely on people's appearances. Thumb through a popular magazine, however, and, LaFollette argues, it's a different story. LaFollette (1990) asserts that during the first half of the twentieth century writers for popular magazines:

> implied, through both text and illustration, that it was somehow possible to distinguish scientists from ordinary people, other than by the occupational label, and thus implied that some discernable difference existed between "the ordinary mortal and the man of genius." (p. 67)

Myths of scientific difference can also be expressed through fictional scientists (Hirsch 1968). Haynes (1994) argues that myths based on archetypal fictional characters, including Dr. Frankenstein, Dr. Jekyll, and the Invisible Man, provide Western culture a means "to explore and express the deep-rooted but often irrational fears their society has held … with respect to science and technology" (p. 313). Such characters have also "allowed the construction of cultural myths that each successive generation deconstructs

for its own situation" (Haynes, 1994, p. 313). Flicker (2003) asserts that "myths and prejudices about science are components of a shared culture" (p. 308). The media, including popular film, play a central role in the creation of myths (Flicker, 2003). Moreover, Flicker (2003) argues, "In contrast to purely linguistic media, film creates pictures that continue as social myths" (p. 308).

Summary

The literature reviewed for this thesis suggests that representations of science and scientists in popular media, including Hollywood films, when viewed as "ideological indicators" (Haynes, 1994, p. 2) are not, for the most part, portraying real scientists or the science profession. Rather, they are portrayals – mediated through the screenwriter and director – of a society's fears and anxieties toward the seemingly unbridled intellect of scientists and the unstoppable progress of science. Such representations, however, must also appeal to mass audiences in order to do well at the box office. One way to accomplish this is to play off of the fears and anxieties of a society during the time in which a film is produced and released. To illustrate this point, one can only imagine what might have happened if certain storyline elements of *The Nutty Professor* films were switched, with the weight-conscious geneticist featured in the 1963 film and the Charles Atlas-inspired chemist as the lead character in the 1996 version. Both films probably would not have been box office successes as a result of such a change.

Although scholarly studies reviewed for this thesis examined images and representations of science and scientists in Hollywood films (Weart, 1988; Flicker, 2003), including over time, none studied the representations of science and scientists in two

films based on the same script with different directors, produced more than thirty years apart. In addition, none of the scholarly studies on images and representations of science and scientists in films examined for this thesis considered the historical context of the periods when the films were produced and released, which, I argue, can provide valuable insight into the possible reasons behind the chosen representations of science and scientists seen in Hollywood films, including *The Nutty Professor*.

CHAPTER 3

THEORY AND METHODOLOGY

As stated earlier, this thesis examines the representations of science and scientists in two popular Hollywood films of the same title – *The Nutty Professor*. In this chapter, I will first discuss the theoretical framework used to provide the perspective for this thesis. Next, I will list the research questions used to guide the focus of this thesis. Last, I will outline the methodology followed in this thesis, which uses the qualitative method of textual analysis for the two films and the *Time* and *Scientific American* magazines used as primary sources of the socio-historical background for both films. I will begin the methodology section by discussing "representation" in semiotic-related terms – language, signifiers, signifieds, signs, and so on. I will then provide the justification behind the selection of the films and magazines used as cultural texts and primary sources for this thesis. And, finally, I will outline the constructed systematic strategy used to analyze the films and printed materials examined for this thesis.

Theoretical Framework

This thesis is a socio-historical study of representation in two Hollywood narrative films and, as such, is a part of the scholarly literature that examines popular culture. Even before popular culture was taken seriously as an area of academic study, scholars used a number of multidisciplinary theories (drawn mainly from sociology, anthropology,

history, and literary studies) such as aesthetic, sociological, anthropological, political, and psychoanalytic to provide perspectives on various forms of mass media, including film (Mukerji & Schudson, 1991; Berger, 2000). This study does not take an effects perspective and, therefore, is not concerned with the effects of images on audiences. Rather, this thesis is based on a cultural perspective, and the ways in which people make sense of and generate meaning from the world around them.

Hall (1997b) describes three approaches – reflective, intentional, and constructionist – that can be used to determine "the 'true' meaning of a word or image" (p. 24). The reflective approach argues that meaning lies "in the object, person, idea or event in the real world, and language functions like a mirror" (Hall, 1997b, p. 24). The intentional approach maintains "it is the speaker, the author, who imposes his or her unique meaning on the world through language" (Hall, 1997b, p. 25). The constructionist approach "acknowledges that neither things in themselves nor the individual users of language can fix meaning in language. Things don't mean: we construct meaning, using representational systems – concepts and signs" (Hall, 1997b, p. 25). In this thesis, I follow the constructionist approach to meaning in language. Indeed, I argue, representation is socially constructed.

In essence, the study of culture is also the study of "the signifying practices of representation" (Barker, 2000, p. 8). Barker (2000) argues, "This requires us to explore the textual generation of meaning" (p. 8). It is important to note, however, that how something or someone is represented within a culture varies from time to time (O'Sullivan, 1994) and by type of media, with each form of media having its own set of conventions from which to communicate meaning (Lacey, 1998). Lacey (1998) argues,

"[A]ll representations are the result of conventions produced at a particular time and place which is determined by the dominant ideology" (p. 189). Genres such as science fiction, musical, western, and romance greatly depend on conventions to determine how a person, thing, or event is represented in media, including Hollywood films (Bordwell & Thompson, 1997; Lacey, 1998). Moreover, genre conventions can "evolve" over time to keep content interesting and to keep up with a culture's changing views (Schatz, 1981).

Theories used for the analysis of film have taken a number of approaches, focusing attention on form, history, and the relationships between film and reality (Braudy & Cohen, 1999). The general perspective of this thesis is that popular films help socially construct society. This argument runs counter to the auteur theory of film which views a director's personality as the sole creator of meaning and representation in film, completely eschewing the social basis of directors' practice. Scholars argue that films (Boggs, 2001; Prince, 1993), along with other areas of popular culture such as print media (Hirsch, 1968) and literature (Haynes, 1994), help construct society. Films are cultural communicators that can be seen to construct a society's values (Dickerson, 1991), fears (Scharf, 1986), distrust (Dickerson, 1991), anti-war sentiments (Suid, 1988), and political views (Boggs, 2001). For example, the negative images of U.S. politics and the political system found in the 1990s films *JFK*, *Bob Roberts*, and *Wag the Dog* were based on "deep trends in American society" at the time the films were produced (Boggs, 2001, p. 366). Boggs (2001) states, "The outright contempt for American politics evoked in these films, and indeed the very substance of their narrative flow, is of course frequently borrowed from actual historical events" (p. 367).

Since the early 1900s, images of science and scientists in popular culture have changed due to shifting social conditions, which are greatly influenced by political and social events experienced at a particular time (Haynes, 1994). At the turn of the twentieth century, scientists enjoyed a brief "period of hero worship" (Haynes, 1994, p. 5). After A-bombs were dropped on Hiroshima and Nagasaki, Japan, however, "scientists' moral stocks plunged once more" (Haynes, 1994, p. 5; see also Weart, 1988). Popular images of science and scientists help produce societal fears and anxieties toward the seemingly lack of control over the steady, and uncertain, march of science and technology (Tudor, 1989; Haynes, 1994; Nelkin, 1995; Nelkin & Lindee, 1995; Van Dijck, 1998). A society's fears, anxieties, and attitudes are not limited to audience members; they are also shared by the writers, directors, and producers of popular culture (Haynes, 1994; Gans, 1999). As Gans (1999) argues:

> [M]edia executives who become successful by guessing correctly [what people want] can often sense what an audience will accept, and frequently they are so firmly embedded themselves in the popular culture to which they are adding that they are 'representatives' of the audience. (p. xiv)

The 1964 black comedy (and nominee for four Academy Awards) *Dr. Strangelove or: How I Learned to Stop Worrying and Love the Bomb* is an example of a film that constructs both society's and filmmakers' shared attitudes based on current events at the time the film was produced. Following World War II, Hollywood portrayed the U.S. military and the bomb favorably (Suid, 1988). By the late 1950s, however, Hollywood filmmakers began to portray the bomb as having no "socially redeeming" value (Suid, 1988, p. 224), an opinion shared by the rest of Cold War society in the United States at that time. Suid (1988) argues:

> Finally, having lived for more than a decade under the tensions of a peace maintained through the threat of nuclear destruction, the American people were ready to look at the other side of the bomb and its relationship to the future of civilization. (p. 224)

Thus, in the early 1960s, after years of Cold War anxieties, which were profoundly heightened by the Cuban missile crisis in October 1962, American audiences could "readily accept" (Suid, 1988, p. 230) director Stanley Kubrick's portrayals of bumbling government officials and military leaders that cause – but cannot prevent – the start of an "accidental" nuclear air strike between the United States and the U.S.S.R. in *Dr. Strangelove*.

Research Questions

The following research questions will serve to guide the focus of this thesis:

> **RQ1**: How are science and scientists represented in each version of the films *The Nutty Professor*?
>
> **RQ2**: How do the representations of science and scientists differ in the two versions of *The Nutty Professor*? How are they similar?
>
> **RQ3**: What were significant features, both scientific and nonscientific, of the respective historical contexts of each film?
>
> **RQ4**: What can the study of science and scientists represented in popular films help us to understand about the social construction of society?

Methodology

Scholars who write about the study of representation invariably mention related terms such as culture, image, language, sign, and meaning (e.g., Hall, 1997b; Rose, 2001). It is difficult, if not impossible, to discuss one term without including the others. The six terms' entwined relationship in society is the primary reason scholars stress the

importance of studying and understanding representation, particularly visual culture, which includes television shows, paintings, advertisements, photos in newspapers, and films (Rose, 2001). For this reason, I will discuss and define representation based on the five terms – culture, image, language, sign, and meaning.

Language and Saussure

Representation produces meaning through the use of language (Hall, 1997b). Saussure argued that language was the sum of two parts – langue (language) and parole (speech) (Metz, 1974). Scholars have also called the former term a linguistic system, language system, (Hall 1997b) or system of signs (Slater, 1999). Saussure considered langue to be the social part of language, governed by rules and codes that are culturally dependent and culturally shared (Metz, 1974; Hall, 1997b; Berger, 2000). Langue is a "universal category" that includes linguistic systems such as English, Spanish, and French, as well as abstract "language" systems underlying such varied things as chess, computers (Metz, 1974) and film (O'Sullivan et al., 1994). Hall (1997b) defines the second term, parole, as the individual act of communication – "speaking or writing or drawing … using the structure and rules of the *langue*" (p. 34, emphasis his). "Haircuts, clothes, [and] facial expressions" (Berger, 2000, p. 43) are also forms of individual communication and, therefore, examples of parole, which Berger (2000) calls "speaking." In regards to Saussure's two parts of language, Montgomery (O'Sullivan et al., 1994) explains:

> There is … a close and complementary relationship between langue and parole. Parole may be seen as a continual implementation of the underlying system constituted in the langue; but conversely the continual practice of speaking affirms and adjusts the langue, molding it gradually into a different form. No one individual can control or shape the langue; but generations of speakers can and do alter it from one historically specific state to another. (p. 218)

Signifiers, Signifieds, and Signs

Saussure argued that the basic unit of language was the sign, which he also divided, analytically speaking, into two parts – the signifier and the signified (Slater, 1999; Rose, 2001). The signifier is the word, sound, image, or object perceived through the senses (Hall, 1997b; McQuail, 2000). The signified is "the mental concept invoked by a physical sign in a given language code" (McQuail, 2000, p. 312). The relationship between the signifier and the signified is arbitrary and conventional (Berger, 2000; Rose, 2001). The relationship is not natural and is "governed by rules of culture and has to be learned by the particular 'interpretative community'" (McQuail, 2000, p. 312).

Together, the signifier and the signified constitute the sign, with the "relation between them, fixed by our cultural and linguistic codes, which sustains representation" (Hall, 1997b, p. 31). Fixed, however, does not mean permanent. Saussure argued that the relationship between the signifier and the signified is not etched in stone (Hall, 1997b). Relationships between signifiers and signifieds can change over time and from one culture to another. If signifiers and signifieds change, then the meaning they produce, will, in turn, also change. As a result, Hall (1997b) argues, "There is … no single, unchanging, universal 'true meaning' … [thus opening] up meaning and representation, in a radical way, to history and change" (p. 32). Change, however, does not end there. Every shift in the relationship between the signifier and the signified, Hall (1997b) argues, "alters the conceptual map of the culture, leading different cultures, at different historical moments, to classify and think about the world differently" (p. 32).

A vast variety of signs can be found in a culture – body piercing, hairstyles, eyeglasses, fashion, body language, jewelry, written words (Berger, 2000). Indeed,

Berger (2000) argues, "To a semiotician, *everything* can be taken for a sign" (p. 38, emphasis his). Fiske (O'Sullivan et al., 1994) lists three "essential" characteristics for a sign: 1) "it must have a physical form;" 2) "it must refer to something other than itself;" and 3) "it must be used and recognized by people as a sign" (p. 284). If signs are not received and interpreted, they are meaningless, and, therefore, useless. In addition, a sign can only be correctly understood in relation to other signs in the same language (O'Sullivan et al., 1994; Slater, 1999). For example, the sign "cat" is understood based on the knowledge of what it is *not* – it is not a dog, not a cow, not a couch, not a hat. Human beings and inanimate objects can also serve as signs (Lacey, 1998).

Hall (1997b) argues that "[a]ny sound, word, image or object which functions as a sign, and is organized with other signs into a system which is capable of carrying and expressing meaning is … 'a language'" (p. 19). Hall (1997b) uses the term "language" broadly to include written and spoken language systems, as well as "visual images, whether produced by hand, mechanical, electronic, digital, or some other means, when they are used to express meaning" (p. 18). The key lies within the belief that other people share the same meanings derived from the images that we do. In order for an image to function as a sign, our cultural partners in the world must be familiar with and be able to "read visual images in roughly similar ways" (Hall, 1997a, p. 4). Hall (1997b) further states, "The relation between 'things,' concepts and signs lies at the heart of the production of meaning in language. The process which links these three elements together is what we call 'representation'" (p. 19).

Semiotics as Method

Although this study does not purport to be a rigidly conceived semiotic study, it does rely on a number of concepts and operations that derive from semiotics. Semiotics incorporates all facets of text, including sound and written words, into a scholarly analysis and investigation of film. Moreover, semiotics is one of two major models of the constructionist approach used in cultural studies (Hall, 1997b, p. 15). For these reasons, a short summary of such qualitative tools is provided in this section.

A significant number of scholars reviewed for this thesis chose to use the "positivist-inclined" (Slater, 1999, p. 234), quantitative method of content analysis (e.g., Hirsch, 1962; LaFollette, 1983; Loetterle, 1994). Through content analysis, scholars purport to have a degree of familiarity with the textual material they are studying *before* they conduct research. Such knowledge is needed so that researchers can place the cultural texts in mutually exclusive categories and define terms operationally in an effort to obtain inter-coder reliability when analyzing and tallying the material. Content analysis lends itself toward "mechanistic readings and conclusions" (Slater, 1999, p. 234) and fences a scholar in, analytically speaking, by using closed-ended questions and investigations.

The qualitative method of semiotics, however, provides an open-ended, holistic, and, I argue, richer systematic approach to "reading cultural texts" (Slater, 1999, p. 234). In terms of cultural studies in general and popular studies in particular, Barker (2000) provides the following definition of a cultural text:

> The concept of text suggests not simply the written word, though this is one of its senses, but all practices which signify. This includes the generation of images, sounds, objects (such as clothes) and activities (like dance and sport). Since

> images, sounds, objects and practices are sign systems, which signify with the same mechanism as language, we may refer to them as cultural texts. (p. 11)

The object of study (signs) in semiotics can, quite literally, be almost anything seen (or heard) within a culture – body language, jewelry, fashion, food, hairstyles (Slater, 1999; Berger, 2000). No preset notions about the subject matter are required, nor encouraged. The realm of study is, in a sense, wide open for analysis. And unlike content analysis, there is no "how-to" list that outlines a series of steps to follow in order to conduct a semiotic analysis, including of film (Berger, 2000; Slater, 1999). Indeed, Slater (1999) argues, "[S]emiotics is all theory and very little method, providing a powerful framework for analysis and very few practical guidelines for rigorously employing it" (p. 238). Instead, a semiotic method is largely constructed by the analyst (Stam et al., 1992). This does not, however, mean that semiotics is devoid of structure or concepts. Semiotics is the "study or 'science of signs' and their general role as vehicles of meaning in culture" (Hall, 1997a, p. 6). The semiotic approach focuses on "the how of representation, with how language produces meaning" (Hall, 1997a, p. 6).

In semiotics, "meaning is based on relationships" (Berger, 2000, p. 43). Saussure argued that there were two types of relationships regarding signs – syntagmatic and paradigmatic (Stam et al., 1992). Syntagmatic relationships have to do with the sequence of characteristics or events in a text and how they generate meaning (Stam et al., 1992; Berger, 2000). Paradigmatic relationships are ones of similarity and contrast (Stam et al., 1992), and deal with how oppositions found hidden in a text generate meaning (Berger, 2000). Berger (2000) argues that every text generates meaning, first, by the syntagmatic structure, then by the paradigmatic structure. As a form of analysis, semiotics analyzes

patterns of these two types of relationships, which, in turn, make certain signs meaningful in particular ways.

Materials Selected

Although the inspiration for this thesis was the film *Back to the Future*, I chose to use *The Nutty Professor* films for a number of reasons. The *Back to the Future* trilogy was produced only five years apart, and used the same director and lead actors with different screenplays. By comparison, *The Nutty Professor* films are based on the same screenplay, but use different actors and directors. The first version of *The Nutty Professor* was released in 1963, starring comedian Jerry Lewis, who also co-wrote the screenplay and directed the film. The second *The Nutty Professor* was released in 1996, with comedian Eddie Murphy as the lead protagonist. The films were produced and released more than thirty years apart, which, I argue, is an important factor to consider in a socio-historical study on representation in film. Moreover, both of *The Nutty Professor* films feature a university science professor/scientist as the lead protagonist who is often seen working in a science milieu, thus making the films ideal for the purposes of this thesis. In addition, both films are categorized as comedy-science fiction, received positive reviews (Miller, 1963; Hamilton, 1996), and were box office successes when they were first released in theaters.

For the film study portion of this thesis, I purchased and viewed widescreen versions of both *The Nutty Professor* films on DVD, which provides an image format for home viewing that is closest to that viewed by audiences in theaters. In addition, the DVD's were viewed on a color television with 16:9 ratio widescreen capabilities, making

the frame proportion seen on the television screen as close as possible to that originally seen by theater audiences. The "TheaterWide 1" picture size mode displayed areas of the image, especially along the vertical edges of the frame, that were cropped off when using the conventional and "full" 4:3 ratio picture sizes on the same television set.

In addition to the two films that are the main focus of this thesis, I studied primary and secondary printed sources to gain insight and perspective on the historical moments of the early 1960s and the mid-1990s. Examining social issues and historical events at the time films are produced and distributed contributes to the understanding of the "why" behind the "how" of representation in Hollywood narrative films. I examined two national magazines – *Time* and *Scientific American* – as primary sources to provide cultural background and insight into the issues and events judged newsworthy at the time the films were produced by filmmakers and first viewed by a mass audience. Magazines are cultural products that help construct the particular social situation and historical context at the time of publication. Moreover, magazines provide another means in which to understand the chosen representations of science and scientists in both *The Nutty Professor* films. I also examined books about science and scientists that were published during the 1960s and 1990s, as well as books that included information written about those two topics and time periods.

I chose to use a national newsweekly magazine – *Time* – and a national science monthly magazine – *Scientific American* – to examine the issues and events that made headlines surrounding the years that the movies were produced, released, and viewed by U.S. audiences. Thus, I examined every issue of both magazines from 1961 to 1963 and from 1994 to 1996. The two magazines were selected for several reasons: 1) both

magazines were printed continuously between 1961 and 1963, and from 1994 to 1996, which includes the years when the films were produced and released; 2) both magazines had circulation and readership that exceeded one million worldwide during those years; 3) throughout the early 1960s and the mid-1990s, *Time* magazine regularly featured science articles (including environment, technology, and health) that were often listed under a separate category in the table of contents, alongside weekly news about national issues, business, world affairs, and the arts.

Method Procedure – Films

It is impossible to say everything about a film. Moreover, the relationships that constitute a film as meaningful are infinite; therefore, one must choose key relationships that emerge from the specific concern of a study. This thesis examines the meanings of science and scientists; thus, how these are represented in both *The Nutty Professor* films is the distinct focus of this study. I viewed each film six times. I based the context of my research on the "five tracks" of cinematic language as outlined by Stam et al. (1992): "moving photographic image, recorded phonetic sound, recorded noises, recorded musical sound, and writing (credits, intertitles, written materials in the shot)" (p. 37). Instead of conducting a shot-by-shot analysis, I focused on isolated segments and fragments within each film, as well as each film as a whole, as text (Stam et al., 1992). The first time I viewed each film, I simply listed differences and similarities between the films' characters and storylines. I examined the mise-en-scène of each film, which included settings, props, costumes, and make-up, as well as diegetic and non-diegetic sounds. With each subsequent viewing of the films, I began to delve further into the

films' similarities and differences, which included noting point-of-view shots for the professors, as well as the professors' interactions with other people such as students, university administrators, and family members. I also noted elements of popular culture seen in each film such as dialogue, music, media, fashion, and food. Each time I viewed the films, I also realized additional – and painfully obvious – aspects of the films that were not seen in previous viewings.

Method Procedure – Magazines

In order to become grounded in the issues and events that occurred during the time that each film was produced and released, I also conducted secondary literature research using two national magazines as primary sources. As stated earlier, I conducted a textual analysis of every issue of the newsweekly *Time* and the science monthly *Scientific American* published in 1961, 1962, 1963, 1994, 1995, and 1996 to gain a socio-historical perspective of the two periods. I obtained bound copies of each of the magazines and examined each issue from cover to cover, including articles, advertisements, images (including cover art), and table of contents. I noted headlines, images, and themes such as the space race, Big Science, and medicine in the 1960s, and genetics, technology, and prescription drug ads in the 1990s. In *Time* magazine, I mainly looked at science-related articles, particularly cover articles, but I also noted popular culture and news items. I paid close attention to articles that were written by or about university science professors or researchers; however, I did not expect to find so many articles that presented the professors as eccentric or offbeat. Indeed, a number of articles in *Time* and *Scientific American* during both time periods portrayed scientists and science as odd and wacky.

Summary

Based on the purpose of this study, the viewing of the films, and the themes that emerge from the secondary literature review, I will make an overall interpretation of the meaning of science and scientists in each film. I will also note and describe key syntagmatic and paradigmatic relationships in the films that produce each interpretation. Such relationships can be composed of visual elements (e.g., editing, framing angles, lighting) and narrative elements (e.g., characterization, dialogue, plot). I will also note historical parallels found in the printed material to the films, thus adding to the understanding of the chosen representations and cultural text found in each film.

CHAPTER 4

ANALYSIS

In this textual analysis, I will focus on how science and scientists are represented in *The Nutty Professor* films and seek to reveal what are actually painfully obvious patterns of syntagmatic and paradigmatic relationships within and between the two films. First, I will provide an overview of each film, briefly introducing each professor and other main characters, as well as presenting a synopsis of the films' storylines. Second, I will discuss similarities and differences within and between the two films in terms of how science and scientists are portrayed in order to establish paradigmatic and syntagmatic patterns. Third, I will incorporate historical context gleaned from the secondary literature review of *Time* and *Scientific American* magazines, as well as from other pertinent primary and secondary sources, into relevant areas of the films' text. Last, I will conclude the analysis with an overall summary of my findings.

Overview of Films

In the 1963 version of *The Nutty Professor*, comedian Jerry Lewis plays Julius Kelp, a chemistry professor and scientist at a small university, who has a slim physique with a bowl haircut, buck teeth, and a slight stoop. He wears black, thick-frame reading glasses, walks with a jerky shuffle, and has a whiny, nasal voice. The film opens with Kelp in front of his class conducting a series of chemistry experiments which ultimately results in

a large explosion that lands him in Dean Warfield's office where he receives a stern reprimand. The explosion is the third of Kelp's scientific career, which includes a previous blast that was the worst disaster in the university's history and seriously injured a student.

Kelp's class consists of about twenty students, who all appear to be steeped in boredom and indifference as they watch his experiments and listen to his lectures, except for one student – Stella Purdy. After a large, athletic student stuffs Kelp on a shelf in a storage closet in the classroom, Stella is the only one who sticks around to help him out. Stella's kindness sparks Kelp's love interest in her. Soon afterward, he sees a magazine advertisement for a men's gym and is inspired to join in order to become a bully-defying muscle man. Six months of workouts later, he's two pounds *lighter* and frustrated by conventional attempts to improve his physique and status in society. Determined to finish what he has started, Kelp decides to find a solution through what he knows best – chemistry. He spends weeks researching and concocting a formula that turns him into society's definition of cool – Buddy Love, who is everything Kelp is not. Love wears his hair slicked back, has straight teeth, perfect eyesight, a pleasant-sounding voice, and walks upright with a swagger. He is also a brash, violent, egotistical, womanizing swinger, who drinks and smokes.

In the 1996 version of *The Nutty Professor*, comedian Eddie Murphy plays Sherman Klump, a genetics professor and researcher at a large university, who is obese, wears a bulbous Afro, round-frame glasses, a mustache, and talks with a deep voice. Klump has a great deal of enthusiasm for his research, which centers on finding a scientific breakthrough that will help people lose weight by genetically altering their fat

cells. The film opens with thousands of laboratory hamsters scattering across campus, scampering into classrooms and scurrying across streets, causing complete panic and chaos. Klump had unknowingly set the hamsters free after he accidentally flipped a switch that opened their cages, which happened as a result of his large size. The rampant rodent incident lands him in Dean Richmond's office where he receives a stern reprimand for causing the university to lose funds from another rich alumnus. Klump is warned that his job is on the line unless he can convince another well-to-do graduate, Harlan Hartley, to donate a $10 million grant to the science department.

Shortly afterward, Klump meets Carla Purty, a graduate student teaching a chemistry class across the hall from his classroom, who introduces herself to him. Carla has followed his work for years and is "a big fan." Later, Klump gets the courage to ask her out on a date, which she gladly accepts. Motivated by the upcoming date and the endless weight-loss product commercials and exercise programs he views on television, Klump joins a gym, takes up jogging, and starts eating better. All of his efforts end, however, after a verbally abusive stand-up comic makes fun of his large size when he's on the date with Carla. Klump returns home to stuff down his depression by eating fattening foods, while sitting on the couch and watching TV. That same night, Klump goes to the laboratory, alone, to try a DNA-manipulating, fat-loss formula on himself. The formula turns him into society's definition of macho – Buddy Love, who is everything Klump is not. Love is physically fit, with close-shaven hair, perfect eyesight, a regular voice, and has the ability to eat platefuls of food without gaining weight. He is also a loud, obnoxious, violent, conceited ladies' man, who wears an earring and dresses in spandex.

Analysis of Films

Both professors are hardworking scientists who are fully committed to their professions, but they do so at the expense of not having a social life and not being active members of pop culture. Kelp spends most of his time immersed in science through teaching in the classroom, or conducting research and experiments in his private laboratory at the university. He is seen off campus only four times: at the gym twice, and, briefly, at a bowling alley and in his bedroom, where he is sound asleep with a book titled "General Chemistry" lying open on top of him. Except for the bully and Stella, Kelp does not interact with his students during or outside of class and does not appear to have any friends. At first, he is romantically involved with Stella only when he is Buddy Love. Kelp's position at the university also limits his social life in another way. When Stella asks him to join the class at the student hangout, a dance club called The Purple Pit, he reminds her that the nightclub is off limits to members of the university faculty. The only time we see Kelp's family is when his parents – an overbearing mother who looms, literally and figuratively, over his submissive father – are seen briefly in a flashback to his childhood and, again, at the end of the film when his father, who becomes the dominant one after he uses the formula, hawks $1 bottles of "Kelp's Kool Tonic" to his son's class. Both times, however, Kelp does not speak to either of his parents.

Klump spends a significant amount of time outside the science milieu, which, for him, is mainly the university laboratory where he works with a number of student assistants, except for when he is concocting or consuming the DNA-restructuring formula. His students eagerly speak to him both on and off the university campus, including at the student hangout, a music-comedy club called The Scream. Klump even

musters up the courage to ask Carla out on two dates. He is often seen at his modest one-bedroom home, where he does routine, non-science-related activities such as checking the mail, listening to pop music, and watching television. Klump is also seen with his father, mother, brother, nephew, and grandmother on several extended occasions eating dinner at his parents' house. During his first visit, however, his family expresses their concerns that he's working too many long hours conducting research in the lab and not spending enough time with them. Clearly, family get-togethers are not a regular event for the Klumps. The 35-year-old Klump is also a pop-culture dropout. He listens to and sings along with music on compact disks, and he busts some moves on the dance floor, but he is at least ten years behind the times, culturally speaking. The song he plays and sings to is "Close the Door" by Teddy Pendergrass, released in 1979, and he shakes his groove thing by doing the bump, the moonwalk, and the robot – all dances that were popular in the 1970s and 1980s. It seems that Klump was in vogue with such trends when he was younger, but fell behind after he became a scientist.

Both scientists are quite knowledgeable in their respective scientific fields; however, their intelligence does not make them immune from feeling insecure and being influenced by advertisements in magazines and commercials on television just like countless other people in society. After Kelp is stuffed onto a jam-packed storage shelf by a burly football player, Stella tells him, "He's a typical bully that loves picking on a small man." Kelp looks somewhat disappointed when she calls him a "small man." Minutes later, Kelp spots a Charles Atlas-inspired magazine advertisement for Vic Tanny Gym that poses the question (and answer): "Why be bullied by the bigger guys? Be a muscle man *yourself*." Underneath those words are two side-by-side images: one of a

thin, scrawny fellow (the kind who gets sand kicked in his face at the beach) – before joining Vic Tanny – and one of a broad-shouldered, muscular man – after joining Vic Tanny. The next shot in the film shows Kelp walking into the entrance of a Vic Tanny gym, where he soon begins working out.

Although Kelp is inspired by an ad to bulk up his physique, Klump is motivated by TV commercials to drink diet shakes, eat "ninety-nine percent fat free" packaged meals, and exercise in order to slim down his four-hundred-pound frame. Klump frequently watches a TV program that features a Richard Simmons-like character named Lance Perkins, who wears tank tops and gym shorts, and shouts words of encouragement to a group of ladies as they sweat to the oldies during aerobic workouts. Klump also views TV commercials. One commercial has Suzanne Somers promoting her Thigh Master Plus contraption and another has a thin woman providing a glowing testimonial for Mega Shake Diet Drinks – "I lost ten pounds in two weeks. Thanks, Mega Shake!" Klump buys into the multimillion-dollar weight-loss industry in America by stocking his refrigerator full of Lance Perkins Mega Shakes and packaged low-fat meals. He also uses Perkins' trademark motivational catch phrase – "Yes, I can!" – to affect positive changes in his own life. At the end of the film, for example, when Klump and Buddy Love are changing back and forth in his body, and having a fistfight, Love tells him, "Sherman, you can't beat me." To which Klump yells back an emphatic – "Yes, I can!" – before he is finally victorious over Love.

It is interesting to note that although Klump is culturally challenged in terms of popular dances and music selection, he is up to date in one area of American society – commercial weight-loss methods and the latest scientific research on weight loss. He

tries a number of popular weight-loss strategies. He buys the latest craze in low-fat, meal programs and shakes, watches Lance Perkins on TV, joins a gym, and tries acupuncture to help curb his appetite. He even owns one of those ceramic pigs that sits on a refrigerator shelf, and every time the fridge door is opened the pig oinks and blinks its lights to serve as an annoying, guilt-ridden reminder that he's eating too much. At times, Klump also follows the latest advice for eating a healthy diet. While eating dinner with his family, he tries hard to eat right by having small portions, watching his salt intake, and drinking water, not soda, with his meals. He also trims the fat and removes the skin from his fried chicken. After his brother advises him to exercise and workout so that he can then eat anything he wants, Klump replies, "Recent studies have shown that certain people are genetically predisposed to gaining weight. Someday in the near future we might even find a cure." And when his father tells him that being big runs on both sides of the family, Klump remains clinically hopeful by responding, "Scientific breakthroughs are occurring all the time."

Kelp and Klump are both completely devoted to their scientific research; however, their undivided professional focus does not turn them into selfish, heartless science machines void of genuine human emotions and feelings. This is especially true for Klump, who is highly considerate of others, including his lab animals. After the thousands of hamsters are accidentally set free, Klump seems relieved to hear that at least one did not get out – an overweight hamster named Shelley that he uses to test his DNA-restructuring, weight-loss formula. He immediately goes to Shelley's cage, located in the lab next to his computer, and asks her, "How are you today, my little powder puff?," as he hand-feeds her a pellet and pats her head. He then begins speaking to her with

animated, baby-talk gibberish. Later, when his student lab assistant, Jason, suggests increasing the formula dosage for Shelley after she loses twenty percent of her body fat overnight, Klump refuses, explaining that he does not want to "jeopardize" her. Clearly, Shelley's well-being is more important to Klump than taking risks by rushing his genetics research.

The two professors show their sensitive sides when they pour out their hearts in poignant, unscripted speeches they give just moments after their formulas wear off and they transform from Buddy Love back into the professor in front of a large group of people. The speeches are quite telling of each man's true character and both include a sincere apology. After he changes from swinging, big-band singer Buddy Love to awkward, unassuming professor onstage in front of a gathering of students, faculty, and staff at the university prom, Kelp confides, "I hope I haven't hurt anyone. I didn't mean to hurt anyone. I didn't mean to do anything that wasn't of a kind nature." And moments after he fights onstage during the alumni ball against Buddy Love to take back his body and his life, Klump states, "I'm terribly sorry about all this. I hope I haven't ruined anybody's evening." Even during their worst moments, both professors actually mean well.

The topic of body size serves as an emotional subject for both professors, but for opposite reasons. Kelp tells Stella that he is "embarrassed" after he is picked on by the bully, and he seems disappointed when she calls him a "small man." Kelp is actually made fun of most for being a scientist, not for his size. Following the explosion in the classroom, for example, Dean Warfield tells him, "You are a menace," and goes on to discuss the "eccentricities" of scientists such as Kelp and Einstein, who "hated haircuts."

Warfield tells Kelp that, in the future, he needs to leave his scientist's eccentricities outside the classroom. Later, Kelp's father calls him a "square bookworm."

The subject of weight, however, is a highly emotional issue for Klump, who is constantly bombarded with fat jokes and rude comments about his weight by Dean Richmond. Following the escaped hamsters incident, for example, Richmond calls Klump a "fat tub of goo." Later, Klump is visibly upset after his father, who is also overweight, tells him that no matter what he does, he'll always be fat, because "asses is big in our family." Klump then becomes depressed after the stand-up comedian at the comedy club blasts fat jokes at him and the audience laughs uproariously. Klump handles the situation in the same way many people do, by acting like it doesn't bother him and then eating tons of junk food – a large bag of Ruffles potato chips, chocolate-covered doughnuts, a jar of M&M candies, a package of Oreos, all downed with sugar-filled soda – to try to numb the emotional pain he's feeling. At one point, he sits in front of the TV, surrounded by a cornucopia of junk food, and cries as he watches an overweight college girl tell Lance Perkins how she was humiliated and crushed by a boy who asked her out only as a joke to attend "Pig Day" at his fraternity.

Kelp and Klump are knowledgeable academic scientists who mean well in their explorations of science, but their scientific endeavors sometimes unexpectedly fail, and, as a result, create disaster or chaos. Both films open with a science-related calamity that is caused by each of the professors – the chemical explosion in Kelp's classroom and the thousands of released hamsters in Klump's laboratory. In the opening scene of the 1963 version of *The Nutty Professor*, Kelp stands in front of his class conducting a series of chemical experiments that includes pouring colorful powders and liquids from one glass

container into another, creating mixtures that bubble up and spill over. The entire time he is conducting the experiments, Kelp is shown either just from the shoulders down or only his hands and arms are in the frame. At one point, Kelp mixes two liquids together in a glass flask, and the results are explosive. The blast demolishes his classroom and rocks the dean's office. Four firefighters are forced to knock down the classroom door, and students run out of the smoke-filled room coughing, with their faces covered in soot. The room looks like a war zone, with desks knocked over and books and paper strewn about on the floor. When the dean's secretary, Miss. Lemon, finally finds Kelp, he is lying on the floor, underneath the classroom door. After Miss. Lemon lifts up the door, the camera captures the first images of a dazed Kelp, who has broken eyeglass lenses and is wearing a soot-covered white lab coat, complete with an upper pocket filled with pens and pencils. He sits up and says simply, "I used too much … ."

The opening scene of the 1996 version of *The Nutty Professor* begins with Klump in his bedroom, getting dressed for work. The television in his bedroom is on, and it is tuned to the Lance Perkins exercise program. The first shot seen in the film is a close-up of Perkins' face as he screams, "Let's sweat!," and leads a group of women in an aerobics routine to the pop song "Macho Man" performed by the Village People. The camera pulls out and pans to the right slightly as Klump walks into the room wearing a white T-shirt and boxers. Klump finishes getting dressed, which includes putting his pocket protector – filled with pens, pencils, and a small, metal ruler – inside his shirt pocket. After he looks in his bedroom mirror to adjust his bow tie, the next shot is of a calm and serene, but bustling, university campus. Up to this point in the film, Klump is only seen from the chin down. As he walks across campus to the laboratory, the camera tilts

upward to capture the first images of his face. Klump stops cold before crossing the street to get to the genetics wing of the science building as he first witnesses the commotion being created by the thousands of released lab hamsters running amok. His mouth opens wide and his eyes grow big as he takes in the chaotic scene. People are screaming and running around as hundreds of the little furry creatures scuttle about on the lawn, on top of cars, and in the streets, even causing an automobile accident. A number of hamsters crawl about on the college's sign, with one using the "o" in Wellman College as an exercise wheel. A man shoots two hamsters cannon-style from a leaf blower. One hamster is shot into the middle of a woman's sandwich just before she takes a bite. The other is shot into a screaming woman's mouth, knocking her to the ground, which causes Klump to exclaim, "Oh, my goodness!" Inside the science building, waves of hamsters scamper down the hallways, through the classrooms, and into the dean's office. After Klump arrives at the lab, he quickly discovers that he is responsible for setting the hamsters free. He unwittingly flipped a lever that opened all of the hamsters' cages simultaneously when he turned and leaned over to pick up his briefcase before locking up the lab and leaving the night before. He winds up doing it two more times before he leaves the lab to report to Dean Richmond's office.

Kelp and Klump are both friendly and considerate men; however, the product of their scientific creation – Buddy Love – is the opposite of the two scientists' personalities and physical looks. In both films, Love is a smooth talking, egotistical womanizer, who, at times, can be violent. He is also a sharp dresser, wearing colorful tailor-made suits, vests, shirts, handkerchiefs, and neckties – but no bow ties. Love also wears a trendy hairstyle – but no eyeglasses.

In the 1963 film, when the quiet, reserved professor Kelp turns into Buddy Love he becomes a brash swinger who smokes cigarettes and drinks boilermakers. Love is a regular at the student hangout, The Purple Pit, where he wows the crowds with his singing and piano playing. Stella seems to be the only person in the club who isn't immediately impressed by Love's good looks and talents. When she firsts meets him she calls him a "rude, discourteous egomaniac." Indeed, no one seems to be more in love with Buddy Love than he is. Unlike Kelp, Love is obsessed with how he looks. He carries a mirror to make sure his slicked back hairdo looks sharp and files his fingernails to keep his hands looking well-manicured. At one point, Love kisses his own hand and asks Stella, "Have some baby?" To which she snaps back, "If I were your baby, I'd be swinging from a tree." Clearly, Stella is not initially smitten by Love, but his good looks and a certain quality about him keep her interested enough to pine for him when he's gone. When the formula wears off, the first thing to return is Kelp's nasal voice. Several times in the film, Love unexpectedly begins to change back into Kelp in front of other people, including Stella. When he does, he is no longer able to smoke cigarettes without coughing or to sing on key, making his rendition of "That Ol' Black Magic" rather shaky.

In the second version of *The Nutty Professor*, the formula turns the soft-spoken, 35-year-old virgin Klump into a loud, sex-driven Buddy Love, who drives a red Dodge Viper with the license plate "PNS CAR." Love's actions are motivated by either his appetite for food or for sex – two things Klump has either had too much of or none at all. Love is a much thinner version of Klump. Unlike Klump, Love does not need to worry about gaining weight. At Burger King, he consumes about six sodas, four hamburgers, French fries, and apple pies in one sitting. Later, he eats six T-bone steaks, five baked

potatoes, and two servings of creamed spinach while on a date with Carla at the music-comedy club, The Scream, where he also gets even with the same comic that insulted him as Klump. Love fires "yo', momma" jokes at the comic like a pro – "Your mother's so fat, she fell into the Grand Canyon and got stuck. … Your mother is so fat, that [she] gets her toenails painted at Earl Schieb" – making the audience laugh uproariously. (Perhaps he knows so many "yo, momma" fat jokes because, as Klump, he's heard them all.) Love eventually goes onto the stage and throws the comic inside a baby grand piano. Whenever the formula wears off, Love's voice changes back to Klump's, and he instantly gains weight in certain areas of his body such as his lips or his hands. At one point, Love changes back into Klump while driving the Viper sports car, and an embarrassed – and stuck – Klump has to have firefighters cut him out of the vehicle with a Jaws of Life device. Love is driven by selfishness and sex to keep taking the formula. He constantly makes sexual overtures to Carla, to no avail, and flirts and has "relations" with other women. At one point, Love tells Klump's lab assistant, Jason, "Someone has to tend to chunky butt's sex life. Chunky butt is extremely horny." Love's extreme behavior is later attributed to having too much testosterone in his blood stream, a side effect of taking the formula.

There is at least one significant difference in the manner in which the character Buddy Love is portrayed in the two films. In the 1963 version of *The Nutty Professor*, Love does not discuss science or conduct scientific work. In the second version, however, Love discusses science with Carla and, at one point, is seen working inside Klump's laboratory – wearing a jogging suit, with no lab coat. Love is also the one who introduces rich alumnus, Harlan Hartley, to Klump's genetics research inside a fine

dining restaurant at the Ritz hotel. At first, Love uses scientific jargon and equations to explain the research, but then decides to "dumb it down" for Hartley. Love uses nearby diners to illustrate the "unsightly conditions" caused by being overweight – "Jell-O arms," "turkey neck," "saddlebag syndrome," and "tank ass." An uncouth Love then proceeds to tell Hartley about Klump's scientific work on a "simple solution that helps reconstruct your metabolic cellular strands thus giving you the appearance of, as they say in medical terms, gluteus minimus, or in layman's terms, an extremely tight, wonderful ass." Later, during the alumni ball and after Love turns back into Klump onstage, Hartley agrees to give the science department the $10 million donation. "He's a brilliant scientist and a gentleman as well," Hartley tells an ecstatic Dean Richmond.

Film Analysis Summary

Kelp and Klump are knowledgeable scientists that use science to transform themselves into what they think society wants them to be, producing a formula that turns them into the extreme of their id personalities – the irrepressible, egotistical Buddy Love. The films follow a classic man-against-self storyline, with both films ending in a victory for the scientists. The product of the Dr. Jekyll and Mr. Hyde transformation – Buddy Love – is the personification of science out of control. In the end, however, society is saved and science is reined in to eliminate Buddy Love and the trouble he has caused.

Both Kelp and Klump are honest, ethical scientists who are neither evil nor maniacal in their attempts to find happiness and acceptance in society through the wonders of science. Both men use science in an attempt to improve upon nature. With their scientific knowledge they create a monster of a different kind – Buddy Love – but

not without gaining knowledge of another type that is even more valuable in the process. As with many scientists, Kelp and Klump are capable of discovering scientific advances and conducting amazing experiments, but, in the end, they ascertain that love truly conquers all, not science. Love for yourself and love for others is what truly matters in life, not creating the latest miracle in science.

What makes the films meaningful is the opposition between inclusion and exclusion of the professors within society. In searching for society's definition of cool and macho, Kelp and Klump go from one extreme personality type to another, but neither type is fully accepted by society. Indeed, Stella and Carla actually have less genuine interest in Buddy Love beyond a physical attraction than they do in the professors, Kelp and Klump. In the end, Kelp and Klump realize that they can be accepted as who they truly are and within the roles they play in society by conforming their scientific activity to everyday, individual human values, which makes them whole people instead of the split, Dr. Jekyll/Mr. Hyde personalities as Buddy Love. One can read this as an affirmation of middle-class values.

Socio-Historical Background

As stated previously, each of the time periods when both *The Nutty Professor* films were produced and released was studied using primary and secondary sources that were either published during the early 1960s and mid-1990s or contained information about those particular time periods in American scientific and cultural history. The printed primary and secondary sources were used to draw out relevant facts and details regarding the two time periods in order to create links to the films' text. Examining such information,

particularly from primary sources, provides a greater perspective and understanding of the two time periods that can be forgotten or overlooked when living in the "now" more than a decade later. There is something about seeing magazine advertisements promoting the V-8 Rambler – named Motor Trend's Car of the Year in 1963 – or hawking Motorola pagers in the mid-1990s that can transport a scholar to another place and time, thus making it an invaluable qualitative research tool. This section will discuss relevant social issues and historical events relating to each film – with a focus on science and popular culture – in chronological order.

The Early 1960s

The 1960s was a revolutionary, anti-establishment decade, when young was hip no matter how old you were. Science was a happening scene during the 1960s, touching all areas of American's lives, from decisions about their health to what they read to the latest gadgets available in stores. In 1962, Americans were first warned about the additional dangers of smoking beyond lung cancer, as celebrities and models in magazine ads and movies, including Jerry Lewis and Stella Stevens in *The Nutty Professor,* lit up with abandon. In the early 1960s, Marvel Comics introduced a new super-hero series, *Spiderman*, also known as Peter Parker, a high school science student who is bitten by a radioactive spider and acquires spider-like abilities such as spinning webs and climbing walls (Locke, 2005). For nonfiction readers, the book *Silent Spring*, by biologist Rachel Carson, was on the top-ten best-selling nonfiction list for a number of months in 1963. The book warned of the dangers of using DDT and other pesticides. Also during that

time, American consumers were enjoying the latest technological innovations – electric typewriters and cordless hedge trimmers.

The enterprise of science first became big business during the 1960s; the formative years of Big Science, which is considered to be the "most important change in the practice of science in the twentieth century" (Miller et al., 1980, p. 4). Big Science promotes team-based research conducted in large, costly, mostly corporate-owned or government-operated laboratories, which, during the early 1960s, included Bell Telephone Laboratories, the National Aeronautics and Space Administration – NASA, and Los Alamos Scientific Laboratory of the University of California, where the A-bomb was developed. Some scientific fields such as nuclear physics, atomic energy, and aeronautical research were large by necessity given the cost of equipment and the scope of research involved in those areas (Cottrell, 1962). In other scientific disciplines such as chemistry and biology, it was still possible during the early 1960s to conduct research in small, independent laboratories (Cottrell, 1962). Moreover, academic scientists worked in solitude in greater numbers than did industry employed scientists at that time (Hirsch, 1968). In 1962, regarding the "shift from 'Little Science' to 'Big Science,'" (Hirsch, 1968), Cottrell (1962) observed, "This way of working still feels new and strange to scientists, particularly those from universities where the solitary genius is still the ideal image of the scientist" (p. 392). Big Science was criticized for its tendency to attract "opportunists who are interested in science chiefly as a vehicle for getting ahead economically and socially rather that as the search for knowledge without the necessity for accompanying financial gains" (Hirsch, 1968, p. 21).

Regardless of the manner in which scientific research was conducted, with or without teams, scientists around the world were held in high esteem during the early 1960s. In January 1961, *Time* magazine named fifteen U.S. scientists as its "Men of the Year" – ten of whom were university professors ("Men of the year," 1961). "Their work shapes the life of every human presently inhabiting the planet, and will influence the destiny of generations to come," the *Time* writer declared ("Men of the year," 1961, p. 40). Indeed, in the early 1960s science was moving at a frantic pace, touching every area of American's lives with its advances – from aerospace to transoceanic communication cables. Science "promised that [it] would perfect man" (Handlin, 1965, p. 191), as well as take him to the moon by 1970, if the Soviet Union didn't get there first. The Cold War pitted U.S. science against the U.S.S.R. in a highly competitive space race that was big business for Big Science, an active participant in both the space race and military buildup. Such scientific progress, however, was not completely welcomed without reservations. In the mid-1960s, Handlin (1965) asserted, "The more useful science becomes … the more it is both respected *and* feared. … The popular response to science is thus ambivalent, mingling anger and enthusiasm, lavish support and profound mistrust" (p. 198, emphasis his). Even people who supported grand scientific endeavors did not completely understand the how or the why behind the miracles and advances of science that were entering their daily lives (Handlin, 1965). Moreover, many U.S. scientists did not agree that millions of dollars in federal funds should have been poured into the country's fledgling space program.

A number of the U.S. scientists chosen as *Time*'s Men of the Year in 1961 had conducted scientific research that either directly or indirectly contributed to the creation

of the atomic bomb or the hydrogen bomb, including the "father of the H-bomb," Hungarian-born physicist Edward Teller, who, at that time, taught a freshman course in physics appreciation at the University of California, Los Angeles (the same university where *The Nutty Professor* was filmed in 1996). By the early 1960s, the United States had reached many milestones in its nuclear weapons program, including dropping A-bombs on the cities of Hiroshima and Nagasaki, Japan in 1945. For more than a decade, the United States and the Soviet Union treated the issue of nuclear diplomacy like a "game of 'chicken'" (Weart, 1988, p. 233), each country piling up nuclear missiles and weapons, each calling the others bluff. The game turned ugly in October 1962, when the United States had to confront the U.S.S.R. during the Cuban missile crisis. "Among leaders and the public together, nuclear fear reached a higher peak during this crisis than at any time before or since" (Weart, 1988, p. 258). The threat was way too close to home. Cuba is located only ninety miles from Key West, Florida. Eventually, the Soviet Union removed its nuclear missiles from Cuba on the condition that the United States stayed out of Cuba, thus avoiding a nuclear war.

Outtakes included on the special edition DVD of the 1963 version of *The Nutty Professor* reveal that it was filmed at the time of the Cuban missile crisis. The outtakes were filmed between October 12, 1962 and December 11, 1962, and the film was released in June 1963. In the film, Buddy Love gives a musical nod to the current events of the early 1960s during his onstage performance at the college's prom. The song "We've Got a World That Swings" performed by Lewis as Buddy Love is a snappy tune that combines a number of cultural events and issues of the early 1960s. Just one line – "Atom bombs, Cape Canaveral, and false alarms" – can be interpreted as commentary on

current events all related to the Soviet Union. Atom bombs were a reality and common fear during the duck-and-cover days of the Cold War. Moreover, Kelp discusses the explosive nature of atomic bombs and hydrogen bombs during one of his class lectures. Signs with arrows pointing in the direction of nuclear fallout shelters seen in Kelp's (studio-constructed) classroom and in the hallway outside his classroom also provide hints of the Cold War era in which the film was produced. Cape Canaveral in Florida was a central site for NASA during the heyday of the space race. False alarms were part of the resulting best-scenario ending to the frightening Cuban missile crisis. Toward the end of the film, Kelp's father, under the influence of the formula, offers Kelp a cigar from Havana. This could also be a reference to the Cuban cigar embargo that went into effect in 1963.

During the same year that people in the United States were lining up at movie theaters across the country to see *The Nutty Professor* starring Lewis, real nutty professors were making the headlines in national newsweeklies and science periodicals. In 1963, *Time* reported that two Harvard University psychology professors were let go after they gave 3,500 doses of LSD to 400 people, "mostly graduate students in psychology and theology, plus a smattering of M.D.'s, artists, and inmates of a state prison" ("LSD," 1963, p. 72) over a period of two "freewheeling" years. At that time, LSD was not considered a narcotic; it was manufactured and distributed under the authority of the FDA, and was supposed to be used only on animals. The Harvard professors, however, used the mind-altering drug to conduct research on "the expansion of the human mind" (p. 72). One of the professors even tried LSD on himself fifty times (p. 72).

That same year, *Time* featured a professor of animal husbandry at the University of California at Davis, who designed a "stand-up feeding trough" to provide "ham-building exercise" for hogs ("Exercise for hams," 1963, p. 36). "It's sort of like a person eating off a mantel," the professor explained (p. 36). As the pigs struggled to get accustomed to their new dining arrangements, the professor oddly noted "how their rear ends wiggled as they reached for their food" (p. 36). Ultimately, the stand-up hogs were slaughtered with an increase of five percent in meat, which was good news for the pork industry. Bigger ham hocks meant more meat and bigger profits. Science magazines were not immune from such outlandish-sounding stories. For example, readers of *Scientific American* in the early 1960s would have found stories, many of them written by university professors, on how slime molds communicate, air-conditioned termite nests, and the language of bees.

The Mid-1990s

The 1990s are often referred to as "the information age," with science providing Americans new forms of technology on a more personal level – from telephones to television. In 1996, a new technology – the V-Chip – was unveiled and approved by the Federal Communications Commission to be installed in all television sets thirteen inches and larger by January 1, 2000. The V-Chip, combined with a new television rating system, would allow parents to take control of what their children watched on TV. Also during that time, interactive television was on the technology horizon with then-unknown personal viewing possibilities. Personal computers were becoming a part of millions of Americans' daily lives. Many of them began to use the World Wide Web and the

Internet to merge onto the information highway. By the mid-1990s, personal pagers were becoming a thing of the past, and cellular phones were quickly becoming a must-have portable piece of communication technology.

The 1990s was also a decade of dieting decadence for many Americans. By the mid-1990s, the United States had grown to become one of the fattest countries in the world. A scene in *The Nutty Professor* where Klump is sitting on the couch surrounded by junk food as he watches television is quite similar to a picture seen in a January 1995 issue of *Time* magazine. The picture, which is spread across two pages, shows an overweight man holding a beer and eating from a large bag of potato chips while sitting on a couch, with a large, empty pizza box tossed to the side. The image is the art for a cover story about scientists discovering that, despite the health and exercise craze of the 1980s, Americans of all ages had "actually plumped out" during that time (Elmer-Dewitt, 1995, p. 58). In 1995, fifty-nine percent of adults in America were defined as clinically obese, "easily qualifying the disease for epidemic status" (Gibbs, 1996, p. 88). Thus, Klump and his family, who are all overweight, including his adolescent nephew, appear to represent a growing trend in American culture at that time. Many experts blamed the super-sized and well-advertised fast-food industry for the increase in the number of overweight Americans in every age group (Elmer-Dewitt, 1995). Simply put, Super Big Gulp sodas, Big Foot pizzas, and king-size Butterfingers resulted in bigger bellies across the country. Klump's junk food binges and his hidden stash of king-size Snickers, PayDay candy bars, and other sweets he kept tucked away in a drawer in his classroom, no doubt, also added to the size of his girth. "If only there were a magic potion for losing weight," pined a *Time* writer, adding that the lucky scientist or entrepreneur who

concocted the “antiflab formula” would be “richer than Ross Perot” (Gorman, 1995a, p. 62).

Developing ways to help shrink a super-sized nation definitely did not escape the attention of the scientific community. Much like the work conducted by Klump, research to develop a “weight-loss wonder drug” (Elmer-Dewitt, 1995) had become a top priority by the mid-1990s for real-life scientists in labs around the world. Moreover, bigger waistlines meant bigger profits for many companies such as drug makers. Pharmaceutical companies made billions from the sales of diet pills. Science eagerly catered to the quick and easy weight-loss solutions sought by millions of Americans hooked on fast food and fast fixes. “The potential market is enormous, not only because obesity is common and growing but also because even an ideal drug will have to be taken indefinitely” (Gibbs, 1996, p. 94). In 1996, there were a dozen obesity drugs in various stages of development by companies such as Glaxo Wellcome and Parke-Davis in the United States, alone. That same year, science presented several new options for weight-conscious Americans – the fat-free wonders of olestra and the too-good-to-be-true diet pill Redux, half of the prescription combination of Fen/Phen. The synthetic oil and the new diet pill, both approved by the FDA, offered a glimmer of hope for almost one-third of the American population that was considered obese.

Along with pharmaceutical fixes and man-made oils, the scientific field of genetics offered possible answers and solutions to weight loss. By the late 1980s, the second generation of biotechnology in general and genetics in particular had become the darlings of the scientific community and the news media, thanks, in large part, to the Human Genome Project (HGP). In 1989, the fifteen-year, $3 billion HGP, funded by the

National Institutes of Health and the U.S. Department of Energy, began extensive research on locating and "mapping" approximately 100,000 human genes. The HGP was "the biological version of the 'man-on-the-moon' project," advancing molecular biology into the big leagues of Big Science and supporting collaborations between "science, industry, and government agencies" (Van Dijck, 1998, p. 119). By the mid-1990s, the HGP was making great strides, identifying more than 2,500 of the 3,000 genetic markers (Nelkin & Lindee, 1995) and finding more than one gene a day (Elmer-Dewitt, 1994a). The HGP was also making sensational headlines. Media sources touted that genes held the key to curing diseases and staying young. Genes also seemed to be the explanation for human behaviors and traits, including violence, homosexuality, and obesity. By the mid-1990s, molecular biology and genetic engineering became "powerful new tools" (Gibbs, 1996, p. 88) for scientists to use in the search for physiological answers to the mystery behind the increase in obesity seen in almost every "affluent" country, including the United States (Gibbs, 1996, p. 88).

In another issue of *Time* magazine, an article titled "Weight-loss nirvana?" (Nash, 1995) contains a subject matter that parallels the storyline of the 1996 version of *The Nutty Professor* and includes an accompanying image of an obese mouse that looks strikingly similar to the overweight hamster, Shelley, seen in the film. The article reported that scientists at Rockefeller University and the Howard Hughes Medical Institute "had discovered a magical potion that melts fat in a matter of weeks," at least in obese mice (Nash, 1995, p. 54). An accompanying image of a rotund mouse with the girth the size of a tennis ball, alongside a svelte, normal-size mouse offers visual examples of the before and after weight-loss scenarios. The "magical potion" discovery

was based on the obese gene, or "ob gene," found in fat cells. The ob gene causes fat cells to produce the hormone leptin, believed to regulate appetite and metabolism. Scientists theorized that the gene was defective in overweight mice. By injecting leptin into obese mice, three separate teams of researchers concluded that it made the fat mice thin, as well as lowered their cholesterol and glucose levels – all within just two weeks. Once the obese mice reached an ideal weight, they stopped losing weight.

Because humans have an ob gene "virtually identical" (Mondi, 1995, p. 55) to mice, it stood to reason that the weight-loss treatment might just work with humans, too. Answers were at least five years away, however. Scientists would have to conduct research on the benefits and possible side effects of leptin before it could be approved for human use. Since the once-obese mice began to gain weight after leptin injections stopped, any approved human treatments would likely have to be administered indefinitely on a daily basis either through shots or implanted under the skin. Such a regimen would provide continuous profits for the company that purchased the rights to the research. California biotech company Amgen "paid Rockefeller University $20 million for patent rights to make products based on the ob gene" (Mondi, 1995, p. 55). The company began phase one of its human trials with leptin in May 1996 (Gibbs, 1996, p. 92), just two months before the release of *The Nutty Professor*, starring Murphy.

By the early 1990s, the field of science had become one of the country's economic movers and shakers. The production of biotechnology worked much like high-stakes business ventures. University and government scientists developed new technology and scientific methods. Biotech companies then purchased the patent rights to the most promising, marketable "products" directly from universities or government

agencies. Sometimes the deal resulted in a handsome return for the biotech firm, other times it was a complete bust. The gamble on biotech companies, however, was given a thumbs-up by investors; Wall Street was "bullish on biotech" in the early 1990s (Gibbons, 1992, p. 766). The highly competitive race for private companies to purchase the rights, then license, develop, and commercialize biotech products in an effort to be the first to make billions of dollars took on a "gold-rush atmosphere" (Nelkin, 1995, p. 30; see also Van Dijck, 1998, p. 96) by the mid-1990s, with the prospecting based on the success of a biotech product and the speculating done on Wall Street. Such cozy business arrangements between biotech scientists and private investors raised concerns that only diseases with the largest potential customer base and, therefore, a maximum return for investors, would be supported, and that scientists would feel pressured and rushed to test on human subjects prematurely (Gorman, 1995c, p. 63). Moreover, media reports on university-industry collaborations referred to academic scientists as "'tycoons,' 'gene merchants,' and 'molecular millionaires'" (Nelkin, 1995, p. 30).

When members of the media were not calling academic scientists names during the mid-1990s, they were reporting bizarre research and odd science conducted by university professors. *Time* magazine featured an article on glow-in-the-dark tobacco genetically engineered with genes from fireflies. Scientists also put chicken genes in potatoes and human genes in pig embryos, which was an (unsuccessful) attempt to produce leaner pork. In 1995, researchers at Duke University Medical Center altered the genetic composition of pigs in order to fool the immune systems of baboons to accept pig heart transplants. The Duke researchers predicted they would be putting pig hearts with

altered genes inside humans by 1997. The animal-to-human organ transplants were a scientific response to the chronic shortage of human organ donors.

Also in 1995, scientists at Massachusetts Institute of Technology and the University of Massachusetts created the scientific know-how to grow a human ear on the back of a mouse. The research was simply a demonstration of how humans might one day grow their own body parts through the miracles of tissue engineering. And in a *Scientific American* article in 1996, a balding ornithologist from Northeast Louisiana University was reported as having purchased a pair of acrylic-nylon crew socks at Wal-Mart to research the insulatory properties of live wild turkeys' unfeathered heads covered with a sock as compared to frozen roosters' heads – feathered and plucked. "Hey, all good field biologists and lab biologists rely on Wal-Mart," (Mirsky, 1996, p. 54) quipped the scientist, who used socks with holes cut out for the turkeys' eyes and bills to poke through for one phase of the research.

Overall Conclusion

Films are cultural artifacts that help construct the society and historical periods in which they are produced and released, which includes crises, trends, and concerns within a society. Images found in films, however, must be understood by members of a culture in order to be interpreted correctly and, therefore, meaningful. Current events and issues within a particular culture provide a universal – and familiar – source that filmmakers can liberally pull from to incorporate into the storylines of films. In the case of *The Nutty Professor* films, a number of parallels are apparent between the cultural text of the films and real-life events and issues that occurred during the time each film was produced and

released. The space race and the genetics-based search for an "antiflab formula" are just two examples of how both films tapped into current events and issues during their respective time periods.

The manner in which Kelp and Klump conduct research in *The Nutty Professor* films helped construct the respective time periods in which the two films were produced. Kelp is a holdout of the "Little Science" era, working as a "solitary genius" (Cottrell, 1962) in his private laboratory at the university, which Cottrell (1962) refers to as "the ideal image of the scientist" during the early 1960s. Klump, however, is a cog in the wheel of Big Science. He is surrounded by a number of student lab assistants in his university laboratory, particularly one named Jason. Moreover, Klump, at Dean Richmond's adamant request, attempts to sway a rich alumnus to fund his genetics research with a donation of a $10 million grant. Big money is key to maintaining Big Science.

Both scientists, particularly Kelp, also support the image of the nutty professor as was often found in national newsweeklies and science periodicals during the early 1960s and mid-1990s. Both scientists create a scientific mishap in the classroom or lab, and pursue a unique area of rigorous scientific research that ultimately results in the infamous Buddy Love. Actual scientists such as the Wal-Mart shopper that conducted odd and wacky research, as well as news and science publications that covered such research, also supported the representation of science and scientists as "nutty" during the two time periods of this study.

The two scientists – Kelp and Klump – share many of the same physical and social features. Both dress the same, using fashion staples such as cardigans, oxford

shirts, tweed jackets, and suits – all in drab, unassuming colors. Both wear unattractive eyeglasses and unflattering hairstyles. Both men are socially awkward, but for different reasons. Kelp is separated from the rest of the world, socially speaking, because he is a devoted scientist who spends virtually every waking hour pursuing his passion of science. His lack of socializing experience is most evident around Stella. Kelp constantly trips over his words whenever he speaks to Stella. Klump, however, is a social outsider not because of his profession, but because of his large size. His weight makes him insecure in certain social situations, particularly around Carla. Initially, Klump fumbles his words around Carla, often incorrectly using references to his size instead of the right words. When she introduces herself to him and tells him she's a big fan of his work, for example, an embarrassed Klump states, "I'm fatter," instead of, "I'm flattered."

Kelp and Klump differ in several ways regarding their social and professional lives. Kelp spends a significantly greater amount of time involved in science-related activities as compared to Klump. Kelp is rarely shown outside the science milieu, which limits how much we know about him. We never see Kelp's home, except briefly after he has fallen asleep in bed reading a *General Chemistry* textbook. We see Kelp's parents several times and gain a slightly better understanding of his personality, but he never interacts with his parents. Klump spends a great deal more time outside of the laboratory and classroom, including with his family at dinner and with Carla at the club. He is often seen at his home conducting mundane tasks such as checking the mail, eating snacks, and watching television. He seems more in touch with the world outside of science. And, unlike Kelp, Klump at least attempts to participate in pop culture through dance, music, and television.

Klump also shows a wide range of emotions and a vulnerable side that are not apparent in Kelp. Klump dances and sings all the way home after Carla agrees to go on a date with him, and, at times, he cracks jokes that are actually funny. Like many Americans, Klump is fighting the battle of the bulge. He also pigs out on junk food to cope with personal crises and cries with empathy as he listens to the heartbroken college girl on Lance Perkins' show. Thus, Klump comes across as more human and "like us." He is not perfect. Klump has faults and feelings, just like everyone else in the world.

In both films, the two scientists use their scientific knowledge and know-how to become who they thought the world wanted them to be. Kelp wanted to be cool, and Klump wanted to be thinner. Their scientific creation – Buddy Love – is scientifically successful, but, as with the explosion and the hamsters, it goes terribly awry in society. In the 1996 version of the film, the formula has a nasty side effect of raising Klump's testosterone levels, turning him into a violent, socially abrasive person. Basically, Love is *too* much man for society to handle. Many FDA approved and advertised prescription drugs on the market have a long list of varied and sundry side effects. (Perhaps the most famous side effect was caused by products that used olestra, which warned of possibly causing "slight anal leakage.") What each professor failed to see, however, was that Stella and Carla liked and respected them just as they were – without the formula. For example, Stella asks Kelp to join the students at The Purple Pit and later asks him to slow dance with her during the school prom. Shortly after Stella learns that Kelp is also Buddy Love, she tells Kelp, "I wouldn't ever want to spend the rest of my life with Buddy. Being the wife of a professor would be much more normal and much happier." The first time Carla meets Klump she tells him that she's followed his work for years and

is “a big fan” of his. She later puts her hand on his during their date at the club, and after the date tells him, “Sherman, you are a brilliant man.”

The fictional characters of Kelp and Klump help to construct an image of scientists and scientific work during their respective time periods, paralleling the male-dominated science profession in American society (LaFollette, 1988; Steinke, 1997), but differing in their representations of scientists in one respect – race. Klump is a black academic scientist. Moreover, Klump’s love interest, Carla, a chemistry graduate student/teaching assistant, played by Jada Pinkett, is also black, which is even more significant. Black female scientists made up a significantly low percentage of the nation’s scientists even during the early 1990s (Steinke, 1997). A number of black students can also be seen in Klump’s class and on the university campus in the 1996 version of the film. Such representations are a marked difference from the first version of *The Nutty Professor* which had only one black person visible throughout the entire film. During the opening credits, a black male student is seen sitting in Kelp’s class, but the student does not appear again in the film.

The change from a white professor to a black professor as the lead protagonist in the 1996 version of *The Nutty Professor* can be read as signifying an even greater distance from the mainstream when combined with the other signifiers of difference for scientists such as physical looks, social life, and knowledge. In this sense, race acts as an even more overt signifier of non-mainstream representation in terms of the role of the scientist in the 1996 film as compared to the 1963 version. Klump is never singled out in the film based on his skin color. He is, however, ridiculed for being obese by Dean Richmond and the stand-up comedian. Moreover, there are no other obese people seen in

the film except for women on the Lance Perkins TV program. Ultimately, Klump is accepted by society for who he is, not for who his scientific formula turns him into. Although Kelp is also accepted by others in the end, the feat is of greater significance for Klump who is not only a minority, but is also overweight – which is the last seemingly socially acceptable group of people to be openly mocked in our culture.

The portrayal of the gender of the professor in both *The Nutty Professor* films, however, does not change. Both professors are male, which serves to signify the irrelevance of women within the science profession except in subordinate roles such as lab assistants or students. Indeed, the vast majority of people cast in key roles as scientists in film are men (Flicker, 2003). Unlike Klump, Carla is not a professor; she is a graduate teaching assistant and student. She is never seen in a classroom or scientific lab, other than Klump's, and does not conduct scientific research or experiments.

As with numerous other studies on images and representations of scientists and science, this study has findings that are quite similar to those published by Mead and Métraux in 1957, particularly in the 1963 version of *The Nutty Professor*. Kelp and Klump have several of the same features of scientists as described by the high school students in the 1957 study in that both are men – as opposed to women – who wear eyeglasses and white lab coats, and use themselves as guinea pigs for their experiments. Kelp has even more characteristics of a scientist as described by the high schoolers in the late 1950s: He is stooped; has no social life or hobbies; talks, eats, breathes, and literally sleeps science; spends most of his days indoors; and has no friends. The representations of science in *The Nutty Professor* films are also similar to the descriptions provided by the students in the Mead and Métraux (1957) study in that both scientists work in

laboratories and are “surrounded by equipment” (Mead and Métraux, 1957, p. 387), which includes Bunsen burners, flasks and bottles, test tubes, microscopes, as well as a “jungle gym of blown glass tubes and weird machines with dials” (p. 387). Moreover, both men conduct experiments, and Kelp creates an explosion, which were both listed by students in the 1957 study.

Kelp and Klump fit some of the characteristics of a pop scientist as listed by Basalla (1976), but, by far, not all of them. Kelp is a chemist, and Klump is a biologist who specializes in genetics. Both men wear eyeglasses and work in a laboratory, which is dark like a dungeon whenever they concoct and consume their scientific formulas. They also have difficulties, in the beginning, speaking to the opposite sex (Stella and Carla). But the similarities end there. Neither scientist wears his lab coat everywhere. For example, they do not wear a lab coat when they report to the dean’s office or when they are at home. And neither professor is bald or has a white shock of hair like Einstein.

Furthermore, neither of the scientists completely fits into any of the six stereotypes of scientists outlined by Haynes (1994). The alchemist stereotype is a scientist who is portrayed as “obsessed and maniacal” (Haynes, 1994, p. 3), which does not describe Kelp or Klump. The stupid virtuoso stereotype scientist requires a scientists to be “sinister” (Haynes, 1994, p. 3), which also does not describe either scientist. Perhaps the closest stereotype Kelp and Klump fit into is the helpless scientist who has lost control of his discovery, “which, monsterlike, has grown beyond his expectations” (Haynes, 1994, p. 4). Indeed, Buddy Love can be viewed as a modern-day Frankenstein monster.

As the love interest of Klump, Carla fits the "daughter or assistant" stereotype as described by Flicker (2003). The character of Carla serves simply as a love interest and offers "emotional assistance" (Flicker, 2003, p. 314) for Klump, the main protagonist and scientist in the 1996 version of *The Nutty Professor*. She is by no means his equal, professionally speaking. It is of interest to note, however, that unlike Klump, Carla does not wear eyeglasses or an unflattering hairstyle, and she is never seen wearing a lab coat or pocket protectors, even when she's in Klump's classroom or laboratory. Instead, she is seen wearing fashionable jackets with (sometimes rather short) skirts, long dresses, and high heels, and has an attractive pageboy hairstyle.

The two versions of *The Nutty Professor* helped construct society's attitudes and fears of scientists during the time in which the two films were produced and released. By association, both scientists are seen as extensions of their scientific professions. As such, the collective representation of the scientists in the films also signifies their respective fields of science. Therefore, Kelp represents the no-nonsense, individualistic science of the early 1960s that "promised that [it] would perfect man" (Handlin, 1965, p. 191). And, Klump represents the bloated, grant-funded science of the mid-1990s that had the potential to turn academic scientists into "'gene merchants' and 'molecular millionaires'" (Nelkin, 1995, p. 30). Furthermore, the representation of science in both films begs the question: Are we really better off in society by depending on science to solve our every desire and latest dilemma? Or does science simply create new and more challenging issues for us to deal with?

Ultimately, both *The Nutty Professor* films rely upon, as well as construct, a narrative about searching for true love and a sense of belonging in American society.

Two socially awkward academic scientists who are unable find romantic relations learn that, in time, they can discover happiness just being who they are. The professors operate as signifiers for social outsider. The inability of the scientific "Love" potion to solve their personal problems signifies the inability of science to solve all of society's problems. Instead of through grandiose experiments and novel artificial means, the solution to human problems and true happiness lies within – and is always available – to each and every person. In its recollection of the human, individual location of abilities, the films underscore a middle-class morality valorizing the "white-bread" mainstream as the most desirable perspective, and a conservative conception of reform as relying ultimately on ones own fortitude and commitment.

CHAPTER 5

CONCLUSION

This thesis examines the ways in which science and scientists are represented within and between two popular Hollywood films of the same title, *The Nutty Professor*, produced more than thirty years apart. It also examines the social issues and historical events that occurred during the production and release of the films in an attempt to gain a better understanding of the "why" behind the "how" of the representations of science and scientists, as well as to support the general perspective of this thesis – that popular films help socially construct the society in which they are produced. One goal of this thesis is to note any changes or similarities in the representations of science and scientists between the two films.

I chose several research questions to guide the focus of this thesis. The first focused on how science and scientists are represented in each film. Scientific knowledge in the films is portrayed as unpredictable and dangerous, with each film opening with a science-related disaster or chaos. The scientists' creation of Buddy Love is also an example of the uncontrollable nature of science. Kelp and Klump are unable to control the behavior and actions of Buddy Love. Much like Frankenstein's monster, Love runs amok within an unsuspecting society. Kelp and Klump are also unable to control the duration of their scientific potions' effectiveness and the exact timing of when the formulas will wear off, thus changing them back into themselves. Real-world headlines

are also filled with the news of dangerous and unpredictable science such as Three Mile Island, Chernobyl, Alar, Prozac, Fen/Phen, and Vioxx.

Science is also represented in the two films as having a dedicated space and a particular assemblage of instruments and supplies. The opening shots of the 1963 version of *The Nutty Professor* features images of glassware filled with colorful, bubbling liquids, tubing, Bunsen burners with high flames, and jars filled with colorful powders. As Kelp conducts his experiments in the classroom, he is surrounded by scientific equipment and supplies such as glassware of all shapes and sizes (e.g., test tubes, beakers, flasks, jars), a maze of tubing that connects glassware filled with bubbling liquids, a periodic chart of the elements on a wall, science books on his desk, various machines with dials and gauges, contraptions that shake glass vials, and a spinning centrifuge containing test tubes filled with colorful liquids. Kelp and Klump's laboratories are similar, containing a labyrinth of clear tubing that connects various shapes and sizes of glassware filled with bubbling liquids, as well as Bunsen burners with tall flames, scientific specimens, and assorted charts. Klump's lab also contains computers and two walls covered with stacks of approximately one hundred tanks filled with laboratory animals. In addition, the sounds of bubbling liquids and spinning centrifuges can be heard in both scientists' laboratories.

Both scientists look and talk differently from everyone else in the films. Kelp is the only person with a bowl haircut, buck teeth, jerky shuffle, and slight stoop. Kelp also sounds different. He speaks with a whiny, nasal voice, as well as in scientific terms not understandable by someone outside the field of science. When Kelp is picked up by the bully in the classroom, for example, he uses scientific terms to describe his condition.

"There goes the tibia," Kelp says when the student gives him a bear hug and picks him up. Klump also uses scientific terms throughout the film during conversations in and out of the classroom or laboratory such as when he outlines the biological differences between gerbils and hamsters for Dean Richmond. Klump is also physically different from all other characters in the 1996 version of *The Nutty Professor* in that he is the only obese person seen throughout the film (with the exception of several women seen on the Lance Perkins show).

Kelp and Klump also have a particular style of dressing that makes them unique. Both men dress conservatively using drab-colored fashion staples such as cardigans, off-the-rack suits, tweed jackets, and bow ties. Kelp keeps the upper pocket of his lab coat filled with pens and pencils. Klump uses a (clear) pocket protector that he keeps filled with pens, pencils, and a small ruler. He even wears the pocket protector in the front chest pocket of his jacket to dinner at his parents' house. It is interesting to note that when both men turn into Buddy Love for the first time, Love heads straight to the store to purchase new clothes. Kelp as Love goes to a European tailor to get a number of fine suits made. Many of the suits have brightly colored jackets and vests. Klump as Love goes to a sporting goods store to buy exercise outfits made with figure-hugging spandex, something the professor would never dream of wearing; he also purchases brightly colored neckties, vests, and gangster-striped suits, which were in fashion during the 1990s.

The second research question focused on the similarities and differences of science and scientists between the two versions of *The Nutty Professor*. Both films opened with a science-related disaster or chaos, portraying science as unpredictably

dangerous or capable of creating pure pandemonium. This has been true in real life as well, with scientific creations such as atomic bombs and genetically modified foods causing quite a stir in society. Science in the films is also portrayed as the ideal means to solve all of society's ills and woes, which includes standing up for yourself against bullies, losing weight, being cool, and attracting the opposite sex. Real science also attempts to cure every known disease and despair in society – from cancer to leaner pork.

The manner in which scientific research is conducted varies in the films. Kelp always conducts his research and experiments in solitude inside a private laboratory, with the only company and conversation provided by a caged mynah bird named Jennifer. Kelp's father and, subsequently, Dean Warfield and his students, are the only ones to benefit from his scientific discovery. Klump works alongside a number of student assistants in his laboratory on the research for a DNA-manipulating, weight-loss formula that has the interest and support of outside investors and the potential to help thousands of people. Klump only works alone whenever he is concocting or consuming the DNA-manipulating formula.

Kelp and Klump are knowledgeable academic scientists who eventually gain the attention and the respect of others through their scientific discovery of the formula. Kelp's father, Dean Warfield, Kelp's students – even Stella – eagerly snatch up bottles of the formula. The last shot of the 1963 film shows Stella holding Kelp's arm as they walk down the hallway outside his classroom. As they walk away it becomes apparent that Stella has a bottle of "Kelp's Kool Tonic" stuffed in each back pocket of her blue jeans. Klump's knowledge and formula greatly impressed wealthy alumnus, Harlan Hartley, who called him "brilliant" and agreed to donate the $10 million to back his genetics

research. In many ways, the creation of Buddy Love can be viewed as a success; he is the fruition of each of the professor's scientific knowledge and know-how. Much like the love-hate relationship Western society has with science (Haynes, 1994), society shuns Kelp and Klump for various reasons, but it fully embraces their scientific knowledge and breakthroughs.

Kelp and Klump also differ in several ways. Kelp is the more introverted of the two scientists. He is often seen conducting science-related activities such as research, experiments, and lectures. Kelp does not take time out to socialize, pursue hobbies, or spend time with his family. He also never shows strong emotions. Klump, however, is more human. He is often seen outside the laboratory and the classroom. Klump gets angry, cries, and laughs. He binges on junk food when he's depressed and is fighting the battle of the bulge. Klump also watches television, listens to popular music, goes on dates, and spends time with his family.

The third research question focused on significant scientific and nonscientific features of each film's historical context. As discussed in Chapter 4, my textual analysis research uncovered several major issues and events that, I argue, are constructed in each of the films' cultural text. In the 1963 film it was – the Cold War, the space race, Little Science, and the Cuban missile crisis. In the 1996 film it was – the obesity epidemic, Big Science, the Human Genome Project, and genetics research. The mention of nutty professors in articles found in *Time* and *Scientific American* during both time periods was unexpected, but it added significantly to the theoretical perspective of this thesis. Filmmakers in both films used storylines, dialogue, characters, music, and props to construct the events and issues of the historical moments when each film was produced.

Implications of Study

As stated earlier in the final research question, one goal of this thesis was to determine what the study of science and scientists represented in popular films helps us to understand about the social construction of society. This study on the representation of science and scientists adds to previous popular culture studies in that it combines a textual analysis of two films based on the same script, but produced more than thirty years apart, with a socio-historical textual analysis of a newsweekly magazine and a scientific periodical published during the three years leading up to and including the release of each film. The emphasis of this research is on a cultural perspective, and the ways in which people make sense of and generate meaning from the world around them. This thesis also adds to our understanding of representations of science and scientists in popular culture (Steinke, 1997).

Conducting scholarly research regarding how science and scientists are depicted in popular culture, including Hollywood films, is important because it reveals Americans' fundamental attitudes toward both subjects (Basalla, 1976). Basalla (1976) argues, "There exists a feedback loop between widely-held American ideas of science and their popular artistic representations in comic strips, television shows, and feature films" (p. 261). Good, bad, or indifferent, the manner in which science and scientists are portrayed in popular culture – namely Hollywood films – in large part constructs a dominant ideology of science in America.

Science has become an unavoidable part of everyday life for Americans. It is inescapable. Popular culture from advertising to television serves as a "crucial source of

guidance and information" for many Americans regarding various topics and concepts, including of scientists and science (Nelkin and Lindee, 1995, p. 11). Moreover, images of scientists in media, including popular films, are largely based on fictional characters (Haynes, 1994), making this research even more critical. Indeed, how a society views science can influence national and international public policy, determine which areas of scientific research receive funding, drive consumer behavior, and determine future careers for elementary and secondary students. As stated earlier, disinterest in science as a profession has been a critical consideration for decades due to an ongoing concern about a scientist shortage in the United States (Hirsch, 1962; C-SPAN2, 2006). Science is now an ongoing international competition, not simply a one-upmanship squabble between two developed countries as it was during the Cold War. More than ever, science matters in this country – and in the world.

Limitations of Study

There are several limitations to be considered regarding the results of this study. My interpretations of *The Nutty Professor* films and socio-historical background sources are not the only possible interpretations that can be made from the materials. Moreover, it is impossible to say everything about a film. In addition, the relationships that make a film meaningful are infinite; therefore, my selection of key syntagmatic and paradigmatic relationships may differ from other scholars. I also only examined two periodicals – *Time* and *Scientific American* – published during the years 1961, 1962, 1963, 1994, 1995, and 1996. As with the films, it is not possible to examine every detail in each issue of *Time* and *Scientific American*. Furthermore, by viewing a widescreen format DVD of

each film on a widescreen television it is possible that I was unable to view details in either of the films that were visible to theater audiences viewing the films in theaters that could add to a study on representation.

Suggestions for Future Research

Research on the images of science and scientists in media outside of newspapers and magazines has not been studied in-depth (Lewenstein, 1995). This study adds to such scholarship; however, there are several other avenues subsequent research on the representation of science and scientists could follow. Films, television, and comic books have been cited as initial sources for stereotypical images of scientists viewed and learned by young children (Rahm & Charbonneau, 1997). Thus, children's TV programs such as *Lilo and Stitch*, *Power Puff Girls, The Adventures of Jimmy Neutron, Boy Genius*, and *SpongeBob Squarepants*, which regularly feature scientist and scientist-villain characters, are one possible focus of study.

Other areas include research that compares the representation of science and scientists in film and television to real scientists and science milieus at actual universities, corporate laboratories, or government agencies (Rahm & Charbonneau, 1997). Studies examining the myth of scientific difference could also be a possible area of research. The literature reviewed for this thesis either did not focus on or barely mentioned the representation of science or scientists as myth. An area that was completely lacking in the science-related literature reviewed for this thesis was on minorities as scientists and in science and, therefore, presents another focus for future scholarly research. Studies that assess audience effects to determine the influence of popular representations of science

and scientists are also needed. Beyond research on the field of science and scientists, a qualitative study of how various occupations such as blue-collar workers (e.g., truck drivers, waitresses, construction workers) or white-color professions (e.g., physicians, accountants, car salesmen) are portrayed in film and television would also add to the scholarship of representation.

As previously stated, one goal of this thesis is to note any changes in the representations of science and scientists between the two films, which, in turn, suggests changes in society's attitudes or prevailing fears (Nelkin, 1995) toward the two topics. Based on my textual analysis of the two films, I conclude that Klump presents a more human side to the representation of a scientist as compared to Kelp. Klump is fallible and social. He belongs to a world outside of science that includes his family, his home, and his weaknesses. As Klump struggles more than Kelp with common, everyday problems such as with his weight and his dysfunctional family, one can interpret this as an increased acceptance of science in society over time. Klump reminds us that scientists are human and that science is imperfect. The representation of science in both films and in the secondary literature research, however, begs the question: Do we really need glow-in-the-dark tobacco? Perhaps some things are best left to Mother Nature and to ones true, inner nature.

REFERENCES

Allan, Stuart. (2002). *Media, Risk and Science*. Buckingham: Open UP.

Barker, Chris. (2000). *Cultural Studies: Theory and Practice*. London: SAGE.

Basalla, George. (1976). Pop science: The depiction of science in popular culture. In Gerald Holton and William A. Blanpied (Eds.), *Science and its Public: The Changing Relationship* (pp. 261-278). Boston: Reidel Publishing.

Beardslee, David C. and Donald O'Dowd. (1962). The college student image of the scientist. In Bernard Barber and Walter Hirsch (Eds.), *The Sociology of Science* (pp. 247-258). New York: MacMillan.

Berger, Arthur Asa. (2000). *Media and Communication Research Methods: An Introduction to Qualitative and Quantitative Approaches*. Thousand Oaks:SAGE.

Boggs, Carl. (2001). Postmodernism the movie. *New Political Science 23*(3), 351-370.

Bordwell, David and Kristin Thompson. (1997). *Film Art: An Introduction*. New York: McGraw-Hill.

Boulding, Kenneth E. (1977). *The Image*. Ann Arbor: University of Michigan Press

Braudy, Leo and Marshall Cohen (Eds.). (1999). *Film Theory and Criticism: Introductory Readings*. New York: Oxford UP.

Brush, Lorelei R. (1979). Avoidance of science and stereotypes of scientists. *Journal of Research in Science Teaching, 16* (3), 237-241.

Cavallero, Jonathan. (2004). Gangsters, fessos, tricksters, and Sopranos: The historical roots of Italian American stereotype anxiety. *Journal of Popular Film and Television, 32(*2), 50-63.

Chambers, David Wade. (1983). Stereotypic images of the scientist: The draw-a-scientist test. *Science Education 67*(2), 255-265.

Chaney, Michael A. (2004). Coloring whiteness and blackvoice minstrelsy: Representations of race and place in Static Shock, King of the Hill, and South Park. *Journal of Popular Film and Television, 31*(4), 167-175.

Corbett, Julia B. (2001). Women, scientists, agitators: Magazine portrayal of Rachel Carson and Theo Colborn. *Journal of Communication*, 51(4), 720-749.

Cottrell, A. H. (1962). Scientists: Solo or concerted? In Bernard Barber and Walter Hirsch (Eds.), *The Sociology of Science* (pp. 388-393). New York: MacMillan.

Cronholm, Margareta and Rolf Sandell. (1981). Scientific information: A review of research. *Journal of Communication, 31*(2), 85-96.

C-SPAN2. (2006, March 21). Science and health in the 21st century – Leadership requirements and public expectations.

Dates, Jannette L. and William Barlow. (1993). *Split Image: African Americans in the Mass Media*. Washington, D.C.: Howard UP.

Dickerson, Gary E. (1991). *The Cinema of Baseball: Images of America, 1929-1989*. Westport: Meckler.

Dunbar, Robin. (1995). *The Trouble with Science*. London: Faber and Faber.

Dunne, Michael. (2004). Bing Crosby's cinematic 'Song of the South.' *Journal of Popular Film and Television,* 32(1), 30-38.

Flicker, Eva. (2003). Between brains and breasts—women scientists in fiction film: On the marginalization and sexualization of scientific competence. *Public Understanding of Science, 12*, 307-318.

Frewer, Lynn. (2003). Societal issues and public attitudes towards genetically modified foods. *Trends in Food Science & Technology, 14*, 319-332.

Gans, Herbert J. (1999). *Popular Culture and High Culture: An Analysis and Evaluation of Taste*. New York: Basic Books.

Gardner, Carl, and Robert Young. (1981). Science on TV: A critique. In Bennett, Tony, Susan Boyd-Bowman, Colin Mercer, and Janet Woollacott (Eds.), *Popular Television and Film* (pp. 171-193). London: BFI Publishing.

Gates, Philippa. (2004). Always a partner in crime: Black masculinity in the Hollywood detective film. *Journal of Popular Film and Television*, 32(1), 20-29.

Gerbner, George, Larry Gross, Nancy Signorielli and Michael Morgan. (1980). Aging with television: Images on television drama and conceptions of social reality. *Journal of Communication, 30*(1), 37-47.

Glucksman, Ernest & Lewis, Jerry. (1963). *The Nutty Professor*. United States: Paramount Pictures.

Goldman, Steven L. (1989). Images of technology in popular films: Discussion and filmography. *Science, Technology, & Human Values 14*(3), 275-301.

Goodell, Rae. (1975). *The Visible Scientists*. Boston: Little Brown.

Grazer, Brian and Simmons, Russell & Shadyac, Tom. (1996) *The Nutty Professor*. United States: Universal City Studios.

Gresh, Lois H., and Robert Weinberg. (2005). *The Science of Supervillians*. Hoboken, N.J.: Wiley.

Hall, Stuart. (1997a). Introduction. In Stuart Hall (Ed.), *Representation: Cultural Representations and Signifying Practices* (pp. 1-11). London: SAGE.

Hall, Stuart. (1997b). The spectacle of the 'Other.' In Stuart Hall (Ed.), *Representation: Cultural Representations and Signifying Practices* (pp. 223-279). London: SAGE.

Hamilton, Doug. (1996, June 28). Movies: Review. *The Atlanta Journal and Constitution*, p. H14.

Handlin, Oscar. (1965). Science and technology in popular culture. In Gerald Holton (Ed.), *Science and Culture: A Study of Cohesive and Disjunctive Forces*, (pp. 184-198). Boston: Houghton Mifflin.

Haynes, Roslynn D. (1994). From *Faust to Strangelove: Representations of the Scientist in Western Literature*. Baltimore: Johns Hopkins UP.

Hirsch, Walter. (1962). The image of the scientist in science fiction: A content analysis. In Bernard Barber and Walter Hirsch (Eds.), *The Sociology of Science* (pp. 259-268). New York: MacMillan.

Hirsch, Walter. (1968). *Scientists in American Society*. New York: Random House.

Hoerrner, Keisha L. (1996). Gender roles in Disney films: Analyzing behaviors from Snow White to Simba. *Women's Studies in Communication,* 19(2), 213-228.

Ingram, David. (2000). *Green Screen: Environmentalism and Hollywood Cinema*. University of Exeter: Short Run Press.

Inness, Sherrie A. (1998). *Tough girls: Women Warriors and Wonder Women in Popular Culture*. Philadelphia: University of Pennsylvania Press.

Jenrette, Jerra, Sherrie McIntosh, and Suzanne Winterberger. (1999). 'Carlotta!': Changing images of Hispanic-American women in daytime soap operas. *Journal of Popular Culture, 33*(2), 37-47.

Jiwani, Yasmin. (2005). The Eurasian female hero(ine): Sydney Fox as relic hunter. *Journal of Popular Film and Television, 32*(4), 182-191.

Johnson, Melissa A. (1999). Pre-television stereotypes: Mexicans in U.S. newsreels, 1919-1932. *Critical Studies in Mass Communication,16,* 417-435.

Krieghbaum, Hillier. (1967). *Science and the Mass Media*. New York: New York UP.

Lacey, Nick. (1998). *Image and Representation: Key Concepts in Media Studies*. New York: St. Martin's.

LaFollette, Marcel C. (1979). *Authority, Promise, and Expectation: The Images of Science and Scientists in American Popular Magazines, 1910-1955*. Ann Arbor: UMI.

LaFollette, Marcel C. (1982). Science on television: Influences and strategies. *Daedalus* 111(4), 183-197.

LaFollette, Marcel C. (1983). *Authority, Promise, and Expectation: The Images of Science and Scientists in American Popular Magazines, 1910-1955*. Ann Arbor: University Microfilms International.

LaFollette, Marcel C. (1988). Eyes on the stars: Images of women scientists in popular magazines. *Science, Technology, & Human Values, 13*(3&4), 262-275.

LaFollette, Marcel C. (1990). *Making Science Our Own: Public Images of Science 1910-1955*. Chicago: Univ. of Chicago Press

Lawson, Andrea and Gregory Fouts. (2004). Mental illness in Disney animated films. *Canadian Journal of Psychiatry, 49*(5), 310-314.

Lewenstein, Bruce V. (1995). Science and the media. In Sheila Jasanoff, Gerald E. Markle, James C. Petersen, & Trevor Pinch (Eds.), *Handbook of Science and Technology Studies* (pp. 257-285). Thousand Oaks: SAGE.

Locke, Simon. (2005). Fantastically reasonable: Ambivalence in the representation of science and technology in super-hero comics. *Public Understanding of Science, 14,* 25-46.

Loetterle, Bridget C. (1994). *Ageless Prose: A Study of the Media-Projected Images of Aging*. New York: Garland.

MacKinnon, Kenneth. (2003). *Representing Men: Maleness and Masculinity in the Media*. New York: Oxford UP.

Marchetti, Gina. (1991). Ethnicity, the cinema and cultural studies. In Lester D. Friedman (Ed.), *Unspeakable Images: Ethnicity and the American Cinema* (pp. 190-211). Urbana: Univ. of Illinois.

Maugh, Thomas H. (1978, April 7). The media: The image of the scientist is bad. *Science, 200,* 37.

McQuail, Denis. (2000). *McQuail's Mass Communication Theory*. London: SAGE.

Mead, Margaret and Rhoda Métraux. (1957). Image of the scientist among high school students: A pilot study. *Science, 126*(3270), 384-390.

Metz, Christian. (1974). *Film Language: A Semiotics of the Cinema*. New York: Oxford UP.

Miller, Jon D., Robert W. Suchner, and Alan M. Voelker. (1980). *Citizenship in an Age of Science: Changing Attitudes Among Young Adults*. New York: Pergamon Press.

Miller, Jonathan. (1963, August 10). The current cinema: All's well in Holland. *The New Yorker, 39,* 61.

Morse, Mary. (1995). *Women Changing Science: Voices From a Field in Transition*. New York: Plenum Press.

Mukerji, Chandra and Michael Schudson (Eds). (1991). *Rethinking Popular Culture: Contemporary Perspectives in Cultural Studies*. Berkeley: University of California Press.

National Science Board. (1996). *Science & Engineering Indicators 1996.*

Nelkin, Dorothy. (1995). *Selling Science: How the Press Covers Science and Technology*. New York: W.H. Freeman.

Nelkin, Dorothy and M. Susan Lindee. (1995). *The DNA Mystique: The Gene as a Cultural Icon*. New York: W. H. Freeman.

Nisbet, Matthew C., Dietram A. Scheufele, James Shanahan, Patricia Moy, Dominique Brossard and Bruce V. Lewenstein. (2002). Knowledge, reservations, or promise?: A media effects model for public perceptions of science and technology. *Communication Research, 29*(5), 584-608.

O'Brien, Pamela Colby. (1996). The happiest films on Earth: A textual and contextual analysis of Walt Disney's Cinderella and The Little Mermaid. *Women's Studies in Communication*, 19(2), 155-183.

O'Sullivan, Tim, John Hartley, Danny Saunders, Martin Montgomery and John Fiske. (1994). *Key Concepts in Communication and Cultural Studies*. London: Routledge.

Perrodin, Alex F. (1966). Children's attitudes towards elementary school science. *Science Education, 50*(3), 214-218.

Pfund, Nancy, & Hofstadter, Laura. (1981). Biomedical innovation and the press. *Journal of Communication, 31*, 138-154.

Potts, Richard, and Isaac Martinez. (1994). Television viewing and children's beliefs about scientists. *Journal of Applied Developmental Psychology 15*, 287-300.

Pounds, Michael C. (1999). *Race in Space: The Representation of Ethnicity in Star Trek and Star Trek: The Next Generation*. Lanham, MD: Scarecrow Press.

Prince, Stephen. (1993) The discourse of pictures: Iconicity and film studies. *Film Quarterly 47*(1), 16-28.

Rafter, Nicole. (2001). American criminal trial films: An overview of their development, 1930-2000. *Journal of Law and Society, 28*(1), 9-24.

Rahm, Jrene, and Paul Charbonneau. (1997). Probing stereotypes through students' drawings of scientists. *American Journal of Physics, 65*(8), 774-778.

Rogers, Carol L. (1999). The importance of understanding audiences. In Sharon M. Friedman, Sharon Dunwoody, & Carol L. Rogers (Eds.), *Communicating Uncertainty: Media Coverage of New and Controversial Science* (pp. 179-200). Mahwah, N.J.: LEA Publishers.

Rose, Gillian. (2001). *Visual Methodologies*. London: SAGE.

Scharf, Barbara F. (1986). Send in the clowns: The image of psychiatry during the Hinckley trial. *Journal of Communication, 36*(4), 80-93.

Schatz, Thomas. (1981). *Hollywood Genres: Formulas, Filmmaking, and the Studio System*. New York: McGraw-Hill.

Schwirian, Patricia M. and Barbara Thomson. (1972). Changing attitudes toward science: Undergraduates in 1967 and 1971. *Journal of Research in Science Teaching, 9*(3), 253-259.

Seiter, Ellen. (1986). Stereotypes and the media: A re-evaluation. *Journal of Communication*, 36(2), 14-26.

Sheldon, Glenn. (2005). 'What's on their plates?' or Feeding the hungry mouths: Laborers, families, and food in the late twentieth century. *The Journal of Popular Culture 38*(3), 564-573.

Slater, Don. (1999). Analysing cultural objects: Content analysis and semiotics." In Clive Seale (Ed.), *Researching Society and Culture* (pp. 233-244). London: SAGE.

Smit, Christopher R. and Anthony Enns. (2001). *Screening Disability: Essays on Cinema and Disability*. Lanham: University Press of America.

Sonnert, Gerhard. (1995). *Who Succeeds in Science?: The Gender Dimension*. New Brunswick, N. J.: Rutgers University Press.

Stam, Robert, Robert Burgoyne, and Sandy Flitterman-Lewis. (1992). *New Vocabularies in Film Semiotics: Structuralism, Post-structuralism and Beyond*. London: Routledge.

Steinke, Jocelyn. (1997). A portrait of a woman as a scientist: Breaking down barriers created by gender-role stereotypes. *Public Understanding of Science, 6*, 409-428.

Suid, Lawrence. (1988). The Pentagon and Hollywood: Dr. Strangelove or How I learned to stop worrying and love the bomb. In John E. O'Connor and Martin A. Jackson (Eds.), *American History/American Film*, (219-235). New York: Continnum.

Templin, Charlotte. (1999). Hillary Clinton as threat to gender norms: Cartoon images of the First Lady. *Journal of Communication Inquiry*, 23(1), 20-36.

Thain, Gerald J. (2001). Cape Fear – Two versions and two visions separated by thirty years. *Journal of Law and Society, 28*(1), 40-46.

Tonsor, Stephen. (1976). The image of science and technology in utopian and science fiction literature. *Modern Age 20(*1), 86-93.

Toumey, Christopher P. (1992). The moral character of mad scientists: A cultural critique of science. *Science, Technology, & Human Values 17*(4), 411-437.

Tudor, Andrew. (1989). *Monsters and Mad Scientists: A Cultural History of the Horror Movie*. Oxford, UK: Basil Blackwell.

Van Dijck. (1998). *Imagenation: Popular Images of Genetics*. New York: New York UP.

Wahl, Otto F. (2003). Depictions of mental illnesses in children's media. *Journal of Mental Health, 12*(3), 249-258.

Weart, Spencer R. (1988). *Nuclear Fear: A History of Images*. London: Harvard UP.

Winokur, Mark. (1991). Black is white/White is black: Passing as strategy of racial compatibility in contemporary Hollywood comedy. In Lester D. Friedman (Ed.), *Unspeakable Images: Ethnicity and the American Cinema* (pp. 190-211). Urbana: Univ. of Illinois.

Withey, Stephen B. (1962). Public opinion about science and scientists. In Bernard Barber and Walter Hirsch (Eds.), *The Sociology of Science* (pp. 153-159). New York: MacMillan.

Yentsch, Clarice M., & Sindermann, Carl J. (1992). *The Woman Scientist: Meeting the Challenges for a Successful Career*. New York: Plenum Press.

Zimmerman, Jacqueline Noll. (2003). *People Like Ourselves: Portrayals of Mental Illness in the Movies*. Lanham, MD: Scarecrow Press.

SECONDARY PERIODICAL REFERENCES

A man's victory. (1963, May 24). *Time*, *81*, 17.

Bonner, John Tyler. (1963, August). How slime molds communicate. *American Scientific*, *209*, 84.

Cavenee, Webster K. and Raymond L White. (1995, March). The genetic basis of cancer. *Scientific American*, *272*, 72.

Chimponauts in training. (1961, January 20). *Time*, *77*, 68-70.

Cohen, Jack S. and Michael E. Hogan. (1994, December). The new genetic medicines. *Scientific American*, *271*, 76.

Dyson, Freeman J. (1995, September). 21st-century spacecraft. *Scientific American*, *273*, 114-117.

Elmer-Dewitt, Philip. (1994a, January 17). The genetic revolution. *Time*, *143*, 46-53.

Elmer-Dewitt, Philip. (1994b, May 23). Play … fast forward … rewind … pause. *Time*, *143*, 44-46.

Elmer-Dewitt, Philip. (1994c, May 30). Fried gene tomatoes: After years of promises and protests, the era of genetically engineered food has finally begun. *Time*, *143*, 54.

Elmer-Dewitt, Philip. (1995, January 16). Fat times. *Time*, *145*, 58-65.

Emotions & the bomb. (1963, January 4). *Time*, *81*, 47-48.

Exercise for hams. (1963, January 25). *Time, 81*, 36.

Geary, James. (1995, November 13). Trapped in the body of a man? *Time, 146*, 94-95.

Getting under your skin. (1963, July 26). *Time, 82*, 40.

Gibbs, W. Wayt. (1996, August). Gaining on fat. *Scientific American, 275*, 88-94.

Gorman, Christine. (1995a, January 16). Desperately seeking a flab-fighting formula. *Time, 145*, 62-63.

Gorman, Christine. (1995b, May 15). On a pig and a prayer: Animal organs may someday preserve human lives. *Time, 145*, 62.

Gorman, Christine. (1995c, October 9). Has gene therapy stalled? *Time, 146*, 62-63.

Great Gordo. (1963, May 24). *Time, 81*, 17-21.

Greenspan, Ralph J. (1995, April). Understanding the genetic construction of behavior. *Scientific American, 272*, 72.

Hammond, E. Cuyler. (1962, July). The effects of smoking. *Scientific American, 207*, 39-46.

How to milk a bee. (1963, February 15). *Time, 81*, 66-67.

Kirchner, Wolfgang H. and William F. Towne. (1994, June). The sensory basis of the honeybee's dance language. *Scientific American, 270*, 74-80.

Kluger, Jeffrey. (1996, November 25). Can we stay young? *Time, 148*, 88-93.

Lemonick, Michael D. (1996a, January 8). Are we ready for fat-free fat? *Time, 147*, 52-61.

Lemonick, Michael D. (1996b, September 2). No wonder you can't resist: Chocolate and marijuana share some chemistry. *Time, 148,* 58.

Lemonick, Michael D. (1996c, September 23). The new miracle drug? *Time, 148,* 60-67.

LeVay, Simon and Dean H. Hamer. (1994, May). Evidence for a biological influence in male homosexuality. *Scientific American, 270,* 43-48.

LSD – And all that. (1963, March 29). *Time, 81*, 72-73.

Lüscher, Martin. (1961, July). Air-conditioned termite nests. *Scientific American, 205,* 138.

Man bites wolf. (1962, September 14). *Time, 80,* 79.

Men of the year. (1961, January 2). *Time, 77,* 40-46.

Mirsky, Steve. (1996, September). Put a sock on it. *Scientific American, 275,* 54.

Nash, J. Madeleine. (1994, April 25). Stopping cancer in its tracks. *Time, 143*, 54-63.

Nash, J. Madeleine. (1995, August 7). Weight-loss nirvana? *Time, 146,* 54-55.

Nash, J. Madeleine. (1996, May 13). Made in Cuba. *Time, 147,* 76-77.

Reaching for the moon. (1962, August 10). *Time, 80,* 52-57.

Rennie, John. (1994, June). Grading the gene tests. *Scientific American, 270*, 88-96.

Skow, John. (1996, January 8). So, how does it taste? *Time, 147,* 59.

The atom. (1961, November 10). *Time, 78*, 21-25.

The atom: For survival's sake. (1962, May 4). *Time, 79*, 18-22.

The cruise of the *Vostok*. (1961, April 21). *Time, 76,* 46-52.

The danger of smoking: More than cancer. (1962, July 6). *Time, 80,* 29.

The grandstands are emptying for the race to the moon. (1963, October 4). *Time, 82*, 64-65.

The heavenly twins. (1962, August 24). *Time, 80,* 14-18.

The high ground. (1962, August 24). *Time, 80,* 7-8.

The nearest thing. (1961, February 10). *Time, 77*, 58-59.

The pest-ridden spring. (1963, July 5). *Time, 82*, 55.

The wonderful professor. (1962, April 6). *Time, 79*, 60.

Thompson, Larry. (1994, January 17). The breast cancer gene: A woman's dilemma. *Time, 143,* 52.

To moon or not to moon. (1963, May 31). *Time, 81*, 53-54.

Toufexis, Anastasia. (1994, May 9). Know what you eat. *Time, 143*, 68.

Toufexis, Anastasia. (1995a, November 6). An eary tale: A bizarre creature shows a new way to replace organs. *Time, 146,* 60.

Toufexis, Anastasia. (1995b, November 13). New evidence of a 'Gay Gene.' *Time, 146,* 95.

Toufexis, Anastasia. (1996, February 5). Fat-free fat: The FDA approves olestra for use in crispy snacks. *Time, 147*, 61.

Von Frisch, Karl. (1962, August). Dialects in the language of the bees. *Scientific American, 207,* 78-88.

Voyage to the Morning Star. (1963, March 8). *Time, 81,* 76-80.

Zoglin, Richard. (1996, February 19). Chips ahoy. *Time, 147*, 58-61.