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Contagious Discourse: Germs, Mass Media, and the Shaping of Reality

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by

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(Under the Direction of William M. Reynolds)

ABSTRACT

Over the past two decades, mass media coverage of certain infectious diseases has become more abundant. News reports of many of these contagious illnesses invoke fear in many people, such as Ebola and pandemic influenza; multidrug-resistant strains of infectious diseases, such as tuberculosis; and agents of biological warfare, a concern that is now at the forefront with many Americans due to the most recent act of bioterrorism on American soil following the events of September 11th. This dissertation focuses on the American public's perception of infectious diseases, particularly as portrayed in the cultural science curriculum. I examine the cyclic nature of the discourse of contagion and its consequences. In doing so, I present a critical analysis of who controls what is included in the discourse, how agendas contribute to what is considered important, and how various threads of the discourse intertwine to create a gestalt-like complex. With this controlled discourse in mind, I discuss how experiencing the conversation contributes to what people believe about the threat of contagion and present how these assumptions shape our perception of reality. Lastly, I demonstrate how our altered perception of reality leads to behavioral changes that alter our world. To illustrate this, I provide examples of two types of reality shifts that occurred over the past few decades: the increase in commercial antibacterial products and antibiotic use contributed to the

development of antibiotic-resistant bacterial strains (a biological shift), and the fear of weapons of mass destruction lead to increased support for a war against Iraq (a sociological shift).

INDEX WORDS: Curriculum, Representation, Infectious Disease, Media, Antibiotic Resistance, Weapons of Mass Destruction

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DEDICATION

This dissertation is dedicated to my friends and family who gave me constant support and encouragement as I worked toward my academic goal. Most importantly, I dedicate this to the three most important people in my life that made my success possible. To my Dad who always cheered me on and continuously reminded me how proud he was of my accomplishments. To my Mom who instilled in me a keen interest in science and public health and who always surrounds me with a mother's love. And to Brian, my wonderful husband, who unwaveringly encouraged me to pursue my doctorate and who provides me with a foundation of support and love so that I can grow and flourish in my professional life.

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CHAPTER 1

CONTAGIOUS DISCOURSE

In February 2003, U.S. Fire Administrator David Paulison recommended a list of useful items to maintain in the home in case of a terror attack; included in this list was plastic sheeting and duct tape for sealing windows and doors in the event of a biological assault. Less than 24 hours later, stores in the greater Washington, D.C. area reported a spike in sales of plastic sheeting and duct tape (Meserve, 2003, February 11). Several hardware stores described sales of duct tape tripling, with some stores selling out of the ubiquitous tool. With the nation's growing concern of weapons of mass destruction in the hands of terrorists, Paulison's security advisory triggered an unexpected reaction from frightened citizens positioning themselves to ensure their own personal safety.

It is relatively safe to assume that many people in the United States are constantly confronted with the topics of germs and contagion in everyday life. During a trip to the grocery store, shoppers are enticed to purchase antibacterial soaps, hand wipes, and dishwashing detergent to defend against the dangers in their own homes. Advertisements for these and other germicidal products are shown on many television stations each day, often multiple times. Newscasts lead with accounts of the Pope's bout with the flu, vaccine shortages, and a potential disaster as a rare, deadly strain of the flu was accidentally shipped to thousands of medical laboratories across the globe in standard medical equipment test kits. Science fiction films and video games about zombie-inducing viruses are regularly released, and television dramas and documentaries about bioterrorism on American soil are familiar. Even the semantics of microbiology have spread to other parts of our culture, with computer viruses a common topic of

conversation. We are living in a culture of contagion – a culture where people are often paranoid of physical contact with each other, especially with strangers, for fear of contracting a disease and being stricken with illness.

An examination of consumer habits and public reaction illustrates that many people are hypersensitive to the thought of contagion and germs, or pathogens that are randomly passed between beings. Household cleaning products advertised to disinfect and kill germs became popular in the mid 1900s, and consumption of these cleansers continues to rise, seemingly parallel to the increasing public awareness of disease-causing microbes. The recent introduction of versatile antibacterial soaps, disposable wipes, and gels contributes to the frenzy of frequent disinfecting of not only countertops and toilet bowls but also of hands and faces. People are willing to try a multitude of products and potions to avoid illness, and they can become anxious when these products become unavailable, as was witnessed in 2004 with the shortage of influenza vaccines. When word reached the general public that the United States would experience a major shortfall in flu vaccines, thousands of people across the country stood in long lines for several hours, hoping to be one of the privileged few who were allowed to receive the vaccine. This plight in our public health system and the American people remained a top news story for several weeks. However, it paled in comparison to the reaction of the American people as they learned of the intentional, murderous act of bioterrorism in the wake of 9/11 – the anthrax attack. People were afraid to open their mail for fear of being exposed to anthrax spores, the government issued guidelines of how to handle suspicious letters, and mailrooms in several organizations began sterilizing mail before it was opened. The overall public reaction to the danger of contagion, regardless of whether or not danger is

actual or false, is highly sensitive and wobbles on a fuzzy border between rational thought and hysteria.

Information Leads to Change

In our culture of excessive information, we must recognize that too much information can be a detriment to our general state of well being. Sometimes, the less you know, the better off you are – a state of blissful ignorance. For example, it is common for expectant mothers who are well-informed about the human body and embryology to self-diagnose a pathological condition in a state of paranoia. When faced with an enormous list of all the things that could go wrong during her pregnancy, she can become increasingly paranoid that something is wrong when the tiniest symptom occurs. Information about an illness not only changes the way the ill person perceives herself, but also alters how she is regarded and handled by others, as Marla Morris (2003, October) discovers in her personal exploration of the communication between an ill teacher and her students.

Since there is so much information about contagion readily available from mass media, an overwhelming sense of anxiety or fear of germs can quickly consume the general public. Often times, stories of illness on the news become contagious entities of their own, spreading through everyday conversation at the water cooler at work and at the dinner table at home. The act of covering a story makes it a story, makes it a relevant part of the conversation. If it is not discussed, the story never becomes part of the discourse; the very act of discussing it makes it reality. Discourse shapes reality or what we often recognize and accept as real.

It is the very act of engaging in discourse about contagion and illness in our hypertextual society that helps shape the reality of illness in which we live. Granted, contagious pathogens do exist and illnesses are real; however, our understanding of how disease operates and what can(not) be done to prevent infection are partly a creation of the dialogue of illness. The conversation not only reflects what is thought to be fact of illness (for example, how illness can be spread from person to person or how microscopic organisms such as bacteria and viruses cause illness), but it also shapes how illness occurs. For example, many consumers purchase and use the mass marketed and extremely popular antibacterial products. However, Jerry Avorn and Daniel Solomon (2000), Stuart Levy (1998; Levy, 2001), and Ricki Lewis (1995) reach a similar conclusion and argue the overuse of these products has the opposite effect of their intent – bacteria and other germs adapt to the antibacterial component in the product and overcome it. As a result, antibacterial-resistant germs develop and thrive. If what these scientists hypothesize is actually happening, the public obsession to prevent germs from spreading essentially changes reality by altering the germs to make them increasingly stronger and more difficult to avoid.

Another example of discourse of contagion shaping reality is our tenuous relationship with smallpox. Smallpox was once a global killer, a horrific disease that was at one time considered to be the scourge of the human race. As advances in science and medicine occurred, so did our fight against this fearsome virus. In the 1950s, the World Health Organization (WHO), armed with the smallpox vaccine, launched an ambitious, aggressive campaign to eradicate smallpox from every city, town and village around the world. After many years of medical assistance and vaccination programs, it seemed we

were winning the war against the virus. In 1973, the WHO declared that the last natural case of smallpox had been identified. Confident that smallpox had been successfully eliminated, the United States discontinued its smallpox vaccination program in the late 1970s while the WHO proclaimed that all smallpox cultures maintained by medical laboratories should be destroyed except for two stock cultures that would be kept in two secure laboratories – one in the United States and one in Russia. Twenty years later, the WHO proposed that the final two cultures be destroyed to officially rid the world of the smallpox virus. Luckily, several scientists argued the foolishness of destroying the "last" remaining cultures, and the proposal was defeated. The WHO naively assumed the cultures in its possession were the only ones remaining; however, we now know of several rogue scientists and laboratories who maintained cultures of smallpox to develop them into biological weapons (J. Miller, Engelberg, & Broad, 2001). We have continued to shape the reality of the threat of smallpox by purporting and believing that we were able to control nature. As a result, the majority of the world population has no immunity to smallpox – neither natural immunity from exposure to smallpox nor artificial immunity from the smallpox vaccine – and is susceptible to the threat of smallpox as a biological weapon.

This dissertation will examine the cyclic nature of the discourse of contagion and its consequences. In doing so, I will present a critical analysis of who controls what is included in the discourse, how agendas contribute to what is considered important, and how various threads of the discourse intertwine to create a gestalt-like complex. With this controlled discourse in mind, I will discuss how experiencing the conversation contributes to what people believe about the threat of contagion, and I will present how

these assumptions shape our perception of reality. Lastly, I will demonstrate how our altered perception of reality leads to behavioral changes that drive biological and sociological shifts in our world.

Mass-Mediated Conversation

Hypersensitivity to the threat of infection is an amalgamation of a consumption of culture, especially popular culture, as well as vast personal experiences. Commonalities from these sources can be found between people, as many people are exposed to ideas of contagion from a wide variety of cultural sources, including the news, advertising, and entertainment venues. The presence and persistence of these sources not only contributes to the conversation, but also creates much of the discourse of contagion in the United States. However, hypersensitivity to contagion draws from a complex, multifaceted culture; it cannot and should not be attributed to a single cause or trigger. Contagious discourse is a dynamic state of influence where a linear cause and effect between sources cannot and should not be identified. An attempt to do so would be largely erroneous and misguided. Nor should it be assumed to be the same for everyone; in discussing public reaction to contagion as a whole, it is necessary to generalize to an extent in order to contemplate its complexity, but this necessity must not be mistaken for a claim to universality. A person's reaction to her environment not only depends upon the convergence of events within a specific time and place, but also draws from a bank of personal experiences that is collectively unique. Regardless, it is possible to examine the commonalities that stem from a consumption of culture; these commonalities are my focus for this research.

A primary source of current information in our culture comes from the news media. The news, disseminated through television, internet, radio, newspapers and news magazines, is a constant contributor to what we know and consider true. This has become even more so over the past twenty years with the popularity of 24-hour cable news channels and the internet as they provide instant and breaking news at the press of a remote control button or the click of a mouse. The constant need to fill airtime of news channels perpetuates histrionic news reporting in order to enthrall viewers and draw remarkable ratings, and medical stories are not immune to this practice. Reports of widespread illness are sensationalized in the news, often causing concern for viewers. Stories of food-borne illnesses illustrate unsafe conditions in popular restaurants; those who watched the television news reports about the string of food poisoning cases associated with the hamburgers at Jack-in-the-Box restaurants in 1993 were familiar with the dangers of consuming undercooked ground beef ("Boy dies in a bacterial outbreak tied to hamburger chain in West," 1993, January 23). The report of the outbreaks was a large story that had a major financial impact on the chain restaurant. After the outbreak, along with the reaction of outrage by the public at being endangered by a “burger joint” and subsequent lawsuits, most restaurants in the United States refuse to serve hamburgers that are cooked less than medium well. Although this and other foodborne illnesses are not contagious, they provide a good example of how avoiding a potential source of illness is a newsworthy story with high ratings from viewer interest.

Although news accounts are a major portion of how we learn of the likelihood of contracting germs, they are certainly not the sole source. The consumer-driven society in which we live and take part in also bolsters our beliefs of the microscopic dangers that

are out there, waiting for the opportunity to infect and ravage a human host. Many corporations have recognized our need to try to infection and have created and marketed consumer products to fit this purpose. Antibacterial and antimicrobial products, such as gels, soaps, and disposable wipes, have flooded the market and advertising space. Household cleaners have long been advertised as the safe and sanitary way to keep the kitchen and bathroom free from nasty germs. Television commercials for these products are aired daily and print ads can be found in a wide variety of magazines, newspapers, and websites. Our capitalist society and consumer culture exacerbate what we believe we need in order to keep ourselves and others healthy.

Entertainment media such as film and television programs are a primary means for the dissemination and proliferation of knowledge about contagion. The power of film and television lies in the visual images that are experienced by the viewer. Unlike information that is presented through the written word, such as books, magazine articles, and newspapers, the viewer of film and television, much like people- watching in a shopping mall, a picture (especially a moving picture) is "worth a thousand words." Bolter and Grusin (2002) emphasize the extreme importance of visual imagery, explaining that "for our visual culture the written word does not have the immediacy that a moving picture has" (p. 100).

The highly personal and unique experience in connection with imagery in film and television is heightened when the presented image is historically grounded or based on a true story. Of course, the scenes in movies, even if based on actual events, should not be considered fact since the nature of the entertainment industry regularly embellishes the story for increased entertainment value and the story is based on someone's

interpretation of the events. They are more part fact, part fiction. Regardless, the element of "truth" or "true story" enhances the impact of the images in one's experience of them. In recent years, Hollywood has released several films with historically-grounded images, and many people have commented on the personal impact of the scenes. Steven Spielberg's Academy-award winning film *Schindler's List* is difficult for many people to watch due to the grueling features of some of the more violent scenes. Images of violence are certainly not uncommon these days, but violence that represents actual events is especially heinous to some. Personally, I still have not been able to watch the film in its entirety because I know that what I am watching actually happened; it makes me physically nauseous. It is very rare for me to be physiologically affected in this manner by a movie; the major difference for me between *Schindler's List* and ultra-violent films like *Ghost Ship* and *Kill Bill* is the historical aspect. My husband had a particularly difficult time watching *Black Hawk Down* for the same reason. Similarly, many people reacted emotionally to scenes in *Saving Private Ryan*, especially World War II veterans.

Not only can these images trigger an emotional response, but they can also serve as a foundation for knowledge construction. This is true of historically-based images as well as those that are highly plausible, albeit entirely fictional. When I recall the morning of September 11, 2001, after the second plane struck the World Trade Center, I remember how my mind, in a state of anxiety, jumped to images from *Wargames* and *Red Dawn* – of watching huge screens track the path of incoming missiles to hundreds of cities all across the United States, and to faceless enemy soldiers parachuting onto the lawn at my school to take over the facilities (respectively). My instinctive reaction, absent of any logical thought, was true fear of what was about to happen. The only place I have ever

been exposed to military invasion is in the movies, and although I did not realize it at the time, it left a marked impression on me. In this arena, my "knowledge" mostly originated from the movies.

Since many "objects of cultural studies so often combine visual and verbal materials, for example in film or television, in advertising, in all sorts of illustrated texts" (J. H. Miller, 1992, p. 9), it is increasingly important to consider the contribution of visual images to the discourse of contagion. A recurrent theme found in film and television over the past decade has been infectious disease, mostly attributable to the emergence, recognition and media coverage of AIDS in the 1980s. The accompanying images of the sick on news reports and web postings create a lasting perception of illness that becomes a foundation for the fear of contagion. In the news media, particularly in television news, repeated images can overshadow the accompanying texts and leave a lasting impression with the viewer, as "we experience our reality through systems of representation that construct, or at least influence our worlds, with the television screen being an important source of such representations" (Lee, 1992, p. 87-88). The news is not only a reflection of events, but it also shapes events for "[n]o longer is popular culture simply a reflection of the world around it. Rather, it serves as an active, if not the primary, shaper of social reality" (Jenkins, McPherson, & Shattuc, 2002, p. 39).

Therefore, imagery is a crucial part of the dialogue with the reader that combines with prior knowledge and experiences to construct new knowledge. Since each person's interpretation of an experience is personal and unique, the additional knowledge that is assembled is different for everyone. Additionally, these experiences are bound by time in that the reader cannot have an identical experience from the same text during a second or

third reading because the reader's context is in constant flux. When a person reads a film or television program, the text of the film is not static – it is hypertext that links to information the reader has encountered in daily conversation, current events, television shows, magazine articles, advertisements, etc. In his work, Lawrence Grossberg (1987) recognizes the importance of viewing cultural events in context with other texts. Reading a moving picture and its images is not a linear process as the mind takes millisecond-length detours, "clicking" on hyperlinks to access stored information. A second or third reading is different because the hypertext is refreshed and the links are altered. Because of the hypertextual quality of film and television, especially scientific images, the relationships between science writers, news media, Hollywood, and the public viewer should be considered highly interactive and intertwined.

A History of Contagious Discourse: 1894-1947

A review of the history of people's responses to infectious disease stories in the media helps to illuminate the variety of ways these reports can and do impact society. As can be expected, media influence on the perception of infectious diseases and the collective reaction to the accompanying perceived risks range from highly influential to largely ignored, and the outcome varies from extremely negative to positive. In what follows, I briefly describe the role of mass media in the unfolding of several important outbreaks of infectious diseases in the United States since the 1890s. However, before I begin this discussion, I believe it is imperative to mention a few caveats. No two outbreaks of an infectious disease or media attention surrounding the events are alike. Most importantly, no outbreak should be examined out of context. Although the media reports cannot be isolated as a single linear cause to a negative (or positive) public

reaction to contagion, the repetitive nature of the media very likely exacerbates the overall effect in one direction or another.

In 1894, Milwaukee, Wisconsin was the locale for a relatively major smallpox outbreak in the United States. By the time the disease had run its course, there were 1,079 confirmed cases of smallpox, 244 of which resulted in death. The city's response to the epidemic was disastrous and ultimately led to a "complete breakdown of civic order" (Leavitt, 2003, p. 1) that included one full month of rioting.

Several factors led to this public health nightmare. At the time, many people believed vaccinations in general were dangerous or useless, so they rebelled against the vaccination program. Additionally, efforts to communicate with people throughout the city using uniformed officers were unexpectedly received with resistance. Since many of the immigrants in the city feared government authority, so they tended to avoid officers in uniform, especially when an officer appeared on their doorstep. However, probably the largest problem in the response to the outbreak was the inequitable government policy for quarantines. Middle- and upper-class people who fell ill were permitted to be quarantined within their own homes, but the poor were remanded to an isolation facility that was largely viewed as a "pesthouse." Those who resisted this move were forcibly taken to the isolation hospital. The dual policy caused much resentment, particularly in the immigrant population, and popular ethnic newspapers closely described these events and the subsequent riots. In reviewing the events, Leavitt concluded that the reactions to this government policy actually accelerated the spread of the disease. Although the situation was the result of poor judgment and communication, the newspapers played an important role in the chaos that unfolded.

During the Spanish Influenza pandemic in 1918, the newspapers again played a role in how events shaped the course of the disease, but in a different manner. However, before I address how the media affected the outcome of the pandemic, it is especially crucial to place the events in social and historical context. The events that unfolded were partially the result of the circumstances of the American medical profession, existing scientific knowledge about infectious diseases, and the political atmosphere both at home and around the world.

Unlike today's medical community in the United States, in the early 1900s the American medical profession as a whole was woefully behind the modern standards of practice in Europe. Overall, medical education did not prepare physicians to enter the profession with even the basic medical skills; in fact, up to the late 1800s the curricula at most American medical schools failed to include any contact with actual patients. A student could fail four out of nine courses and still receive his medical degree. In 1907, the American Medical Association compiled a confidential report assessing the state of medical education reform in the 162 medical schools in the United States and Canada.

> It concluded that at the better schools improvement was occurring, although, despite enormous effort by many reformers, not at a rapid enough pace. But the worst schools had barely changed at all. Faculty still owned most of them, most still had no connection to a university or hospital and no standards for admission, and tuition still funded faculty salaries. One school had graduated 105 "doctors" in 1905, none of whom had completed any laboratory work whatsoever; they had not dissected a single cadaver, nor had they seen a single patient. They would wait for a patient to enter their office for that experience. (Barry, 2004, p. 83)

To make matters worse, most did not continue academic activities to enhance their skills once they were out in the field. So, with the worst pandemic in the twentieth century approaching, the majority of currently practicing physicians in the United States had a questionable educational background.

Additionally, the fields of microbiology and immunology were in its infancy stages. Although experiments by Louis Pasteur, Robert Koch and others in the 1880s led to the acknowledgement by many scientists of the germ theory of disease – that microorganisms (germs) caused illnesses in people rather than a blood disorder – the theory was not fully accepted until the 1920s. Vaccinations were being developed and viruses had been found but both were poorly understood; penicillin had not yet been discovered. Compared to what we know and use as a basis for medical treatments in the twenty-first century, physicians during the Spanish flu pandemic had very little to draw from to make a proper diagnosis and prescribed treatment.

The state of adequate medical care in the United States was compounded by the worldwide events occurring during that time period – America entered World War I only one year prior to the beginning of the pandemic. At first thought, this may not seem very significant, but it did in fact have a substantial impact on the spread of a highly contagious illness. Thousands of American men from vastly different geographical regions were joining the war effort, first moving to training bases and then across the ocean. At military facilities, the problem of overcrowding in barracks grew increasingly worse, and in the middle of a record cold winter in 1917-1918, men crowded together in buildings around a central stove in an effort to keep warm. Proximity is a benefit to the influenza virus, as germs freely moved from one tired soldier to the next. Soldiers were

packed onto trains and ships to travel from camp to camp and country to country. Levels of existing immunity greatly varied between the soldiers, with young boys from rural farms having limited exposure to diseases mingling with men from cities who typically have more immunity towards community illnesses. As a result, soldiers from small farms and towns were extremely susceptible to illnesses that were "new" to their environment. Massive overcrowding and the nomadic nature of military activity expedited the journey of the viruses around the globe.

But these were not the only circumstances surrounding the war that affected the spread of the disease. Another critical piece that augmented the progression of the pandemic was the intentional lack of communicating the gravity of the threat to the American public. It was a time of war, and the outcome of the conflict – our very way of life – was at stake. Universal support for the war was absolutely necessary; anything that threatened this support was not to be tolerated. President Woodrow Wilson was mindful of the requisite support from the country's men and women when he slowly crept towards entering the war, as he later enlightened a friend by stating "it was necessary for me by very slow stages and with the most genuine purpose to avoid war to lead the country on to a single way of thinking" (as cited in Barry, 2004, p. 121). The American people were united behind the war effort, and any singular incident that could be detrimental to the country's morale or sense of duty where the war was concerned was perceived as a threat. It was during this time that the United States willingly entered a period of self-censorship, setting aside the First Amendment for what was believed to be the good of the country and the world.

With this mindset in place, the United States Congress, with the full endorsement of President Wilson, ratified the Espionage Act of 1917. This Act, in addition to other things, allowed the Postmaster the right to refuse to deliver any mail he determined to be unpatriotic or critical of the government. Inherently, the American people allowed the government to censor their mail in an effort to support the war. Of course, this was notable in 1917 since the mail was the major form of mass communication through newspapers and other printed media. Not only did Postmaster General Albert Sidney Burleson have the right under the law to refuse to deliver mail he determined to be suspect, but he also exercised this right.

In 1918, an amendment was made to the Espionage Act that became known as the Sedition Act. The Sedition Act made it punishable for up to twenty years in prison to "utter, print, write or publish any disloyal, profane, scurrilous, or abusive language about the government of the United States" (as cited in Barry, 2004, p. 124). This amendment ultimately prohibited any verbal or written attacks on the government, the Constitution, or the American flag. The laws that were put into place during World War I – the Espionage Act and the accompanying Sedition Act amendment – essentially gagged the media to where they could not do anything, write anything, or say anything that might negatively impact the morals of the country or the outcome of the war. This included any threat to the people as a whole, especially the threat of infectious disease. The Sedition Act was ultimately repealed in 1921, only three years after being voted into law.

To complement the purpose of the Espionage and Sedition Acts, President Wilson created the Committee on Public Information with Executive Order 2594. The charge of the committee was to create a marketing campaign to unite Americans in a sense of

patriotic duty and to safeguard and bolster the morale of the nation. The primary way to accomplish the goals of the committee was to take advantage of print media. "[Head of Committee George] Creel used tens of thousands of press releases and feature stories that were routinely run unedited by newspapers. And those same publications instituted a self-censorship. Editors would print nothing that they thought might hurt morale" (Barry, 2004, p. 127). With this mentality in place in addition to the laws and the influence of the Presidential Committee, very few stories of infectious diseases or the gravity of what was to become a pandemic were run in the press or found in the newspapers. Since this was the major form of communication across the country, dangerously few people were aware of the situation that was unfolding in the military camps and that their lives would soon be in jeopardy. In retrospect, this lack of communication contributed to the endangerment of the lives of millions of people worldwide.

In fact, the nickname given to the 1918 influenza reflects this very situation. This pandemic is often referred to as the Spanish flu. According to Barry (2004), the political position of Spain in World War I led to this misnomer:

> Spain actually had a few cases before May, but the country was neutral during the war. That meant the government did not censor the press, and unlike French, German, and British newspapers – which printed nothing negative, nothing that might hurt morale – Spanish papers were filled with reports of the disease, especially when King Alphonse XIII fell seriously ill.
>
> The disease soon became known as "Spanish influenza" or "Spanish flu," very likely because only Spanish newspapers were publishing accounts of the spread of the disease that were picked up in other countries. (p. 171)

Since the newspapers in Spain were not self-censoring or being censored by the government, the world's perception of the pandemic flu reflects the incorrect notion that the flu originated in Spain. On the contrary, at the height of the pandemic flu in the United States, public health and government officials were still reassuring Americans through the media that there was little danger. However, in 1918 the *Journal of the American Medical Association* spoke out against these reassurances and warned within its journal that the advice being given by officials was useless and dangerous (Journal of the American Medical Association, 1918, Oct 12).

The media's approach of printing a modicum of truth backfired in the public health arena because people no longer trusted what they read. This lack of trust cultivated fear. Fear manifested partly because of the lack of credible information from a specific source. Once the fear had ensconced itself throughout the country, the government and public health officials could no longer control it because the people believed that everything they read "had been diluted with lies" (Barry, 2004, p. 340). Compounding this problem were advertisements that were run in the news media, which were sometimes visually indistinguishable from the news itself. These advertisements were hawking products to halt the spread of germs and were sometimes misleading.

One of the only places in the United States whose leadership was frank with its citizens about the danger was San Francisco. Their willingness to be open and honest with the people of the city may have been the result of dealing with the devastation from the massive earthquake nearly a dozen years before the pandemic. In fact, San Francisco had one of the lowest rates of infection across the United States during the first wave of

influenza, which may have been a direct consequence of the honesty that was found in the print media.

In all other parts of the country, "the media and public officials helped create… terror – not by exaggerating the disease but by minimizing it, by trying to reassure" (Barry, 2004, p. 461). In context, it was the public officials in cooperation with the media that exacerbated the fear that swept across the country. After studying the events that surrounded the Spanish flu, Barry concluded

> [I]n every horror movie, once the monster appears, terror condenses into the concrete and diminishes. Fear remains. But the edge of panic created by the unknown dissipates. The power of the imagination dissipates.
>
> In 1918 the lies of officials and of the press never allowed the terror to condense into the concrete. The public could trust nothing and so they knew nothing. So a terror seeped into the society that prevented one woman from caring for her sister, that prevented volunteers from brining food to families too ill to feed themselves and who starved to death because of it, that prevented trained nurses from responding to the most urgent calls for their services. The fear, not the disease, threatened to break the society apart. (p. 461)

Barry's concept that terror of the unknown is a greater threat to society than the actual virus is the key to understanding how contagious discourse can shape reality. The evolution of terror depends upon the communication of misinformation and the acceptance of the faulty information by a large portion of the public. In turn, terror of the unknown can sometimes alter the trajectory of actual events.

In stark contrast to the smallpox outbreak in Milwaukee in 1894 and the pandemic flu in the United States, when smallpox threatened New York City in 1947, public health officials took a different approach. When it was identified that a man died from smallpox, New York City quickly introduced an orderly vaccination program. In addition, daily press conferences were held and clear messages were issued across the media. Public health officials refused to allow fear to encroach upon their efforts, and they fully released the details of every case to keep all interested persons informed of the evolving situation. This was found to be a successful tactic because "there was a perception of, and also a reality of, honesty and justice from the Health Department and from the city government…, in large part because people felt they were being informed of every detail as events unfolded" (Leavitt, 2003, p. 5). Perhaps this is another situation of context because the citizens of New York City may have been accustomed to public cooperation in compliance with efforts for World War II.

In the end, a major outbreak was prevented. More than six million people in New York City were vaccinated, and ultimately only twelve cases were reported. Of those twelve, only two cases of smallpox proved to be fatal. It was important for the public to believe that equality and justice existed in the efforts to prevent the spread of the illness. The news media were a critical part of this. "The media wholly collaborated; the editorial boards of all the major newspapers in New York City sat down and met with the commissioner of health, mapping out strategies for convincing the populace to voluntarily undergo vaccination" (Garrett, 2001, p. 90). Smallpox in the United States during the mid-twenty-first century, and it could have been a disastrous event, but since public health and government officials fully cooperated and disclosed vital information to

the public, the result was a very successful vaccination program and a halt in the spread of the illness. Again, the information provided to the news media and how they respond to help promote the efforts to contain the outbreak was an important part of a successful public health intervention.

Contagious Discourse in the Age of Continuous News Media

The reaction of the public to continuous news coverage of outbreaks is a complex one that encompasses a wide range of emotions and comprehension. In a recent study, Glass and Schoch-Spana (2002) show the availability of information to the general public, including updates on the outbreak, guidelines for care of the ill and suggestions for the prevention of transmission of the pathogens, reduces panic and uncertainty. The wide dissemination of information gives a sense of control regardless of whether or not control is actually established. However, a disadvantage to the voluminous coverage is that the situation is virtually inescapable. What tends to be continually on the mind is the vulnerability of each and every person, especially loved ones. The looming reality is that a person has very little control over the spread of illness. Since the coverage of the outbreak is typically accompanied by images of the dying and the dead, the graveness of the problem is reinforced, potentially increasing the level of fear.

News reports of contagious illness, epidemics, and pandemics are more sensationalized and often obtain a greater reaction from the public. This was primarily evident as the public attention towards emerging infectious diseases (EID) began in earnest in the early to mid-1990s, after many Americans became all too familiar with the personal risk of contracting a lethal virus – HIV. The treatment of AIDS in the news is important to consider as it greatly contributed to the public perception of contagion.

When the illness first began to be noticed, much of it was treated in the media as an affliction of homosexual men. In the context of the conservative Reagan administration, this disease, which was originally named Gay-Related Immune Deficiency (GRID) to reflect the affected population, was tied to immorality and sinfulness, and it was mostly dismissed by the heterosexual public since it posed minimal risk to themselves. Not until cases of the syndrome were diagnosed in children and white heterosexual men did the majority of the scientific community as well as politicians, media, and for the most part the general public, become immensely concerned. The media refocused its attention toward the innocent victims of HIV, such as the story of Ryan White, the 14-year-old boy dying of AIDS after contracting the virus through a blood transfusion. The media attention on stories such as Ryan White's as well as celebrity deaths like Rock Hudson changed the overall mentality of the United States towards HIV and AIDS.

A review of the news coverage of AIDS during the 1980s depicts the complexities of the role of the media in a public health crisis. The original reports of the new, mysterious illness focused on the target population (as it was originally believed to be) of homosexual men and heroin users, effectively allowing some people to shun those with the disease and label them as miscreants deserving of their fate. As the news of the nondiscriminatory transmission of HIV was broadcast, people slowly realized their own personal health and safety may be at risk in the midst of what was becoming a pandemic. Martin (1994) explains:

> …there has been a move afoot in the popular press to reposition the general public in such a way that the general public 'we' is depicted as just as much at risk from disastrous epidemics as the special populations who were once depicted as the

> only people threatened by AIDS. The position of "the public" has moved from safe witness to participant in impending disaster. (p. 229)

A revelation of this nature is a blessing and a curse in the public health arena, as the public response to AIDS shifted to concern and fear. AIDS victims became social victims – some of the healthy were afraid to touch a person with AIDS. Questions concerning the safety of sharing air in confined spaces, swimming in the same pool, and using the same toilet seat with one infected with HIV arose. Unfortunately, features in the news sometimes contributed to the level of anxiety. As a part of their ethnographic study, Lather and Smithies (1997) interviewed a young woman who articulated the problem:

> I think the media tends to impact us negatively about it a lot. They put these people on TV who are on their last breath instead of empowering us by saying this person is around still, they are still going, we are getting somewhere. So I think we need to tune out a lot of what the media is talking about, because they need ratings and dying people are going to get a lot of attention. (p. 10)

Awareness of the contagion can, and did, become a fear of others.

However, as more information about AIDS was discovered and became available to the news media, the general public became more knowledgeable about the transmission of HIV. More and more people became aware of how to protect themselves against the virus, contributing to the overall decrease in the spread of the virus in the United States. Although this accomplishment is the result of countless efforts by medical personnel and health officials to educate the public, the massive amount of media coverage helped to inform the people and curtail the epidemic in the United States.

Media exposure to AIDS helped to create a general public that is much more sensitive to lethal infectious diseases than in previous years, and set the stage for concern and accompanying media frenzies of certain emerging epidemics and public health crises in the United States. In the years following coverage of the emerging AIDS epidemic, the news media has continued to report and dramatize contagion in the United States. In the 1990s, people read and watched countless news stories of contagious illnesses threatening them and those they care for: new information on the AIDS pandemic, antibiotic-resistant bacteria being passed from child to child in daycare centers, the emergence of multi-drug resistant tuberculosis, the overuse of antibiotics, and the widespread appearance of unfamiliar diseases such as hantavirus, Lyme disease, and West Nile virus. Within the past few years, we have been warned about SARS, viral infections incapacitating travelers aboard luxury cruise ships, children becoming ill from contracting bacteria in community wading pools and water parks, shortages and ineffectiveness of influenza vaccines, and children falling ill after visiting petting zoos. As McGee (2003) explains, each news report about infection builds on the discourse of the previous news story, creating a "priming effect" that allows each biological event to augment the public reaction to the next event. The priming effect was particularly evident in the 1995 media coverage of Ebola and the public response.

Three years earlier, science writer Richard Preston (1992, October 26) published "Crisis in the Hot Zone" in *The New Yorker*, an article describing a virus that was relatively unknown at the time. Ebola, a viral hemorrhagic fever of unknown origin, boasts a mortality rate of 50 to 90 percent of its human victims, depending upon which strain infects the person. It is mostly transmitted through body fluids, and within three

days of exposure, a person will begin experiencing symptoms similar to the flu. However, the symptoms of the illness take a horrendous and painful turn, with massive and uncontrollable bleeding commencing around day six. Blood pools under the skin to form bruises and blistering, and eventually flows from every orifice of the body, including the nose, ears, and eyes. Patients suffer from bloody diarrhea and incessant vomiting consisting of fresh blood and dying tissue from the intestinal tract. Around the ninth day, death comes to most.

As Preston describes, Ebola first surfaced in Africa in 1976. The virus struck villages in Zaire and the Sudan with a vengeance, killing over 400 people – around 90 percent of those that were infected with the virus. But for the most part, it was not the epidemic that occurred 16 years prior in a far-off place that caught the attention of The New Yorker readers. It was Preston's revelation that this very virus appeared in the United States in 1989 that elicited a wide response. Amazingly, Ebola reemerged in Reston, Virginia, 15 miles outside of Washington, D.C. Preston describes how a laboratory facility in Reston received a shipment of monkeys from the Philippines. The veterinarian noticed the monkeys were dying in unusually high numbers and sent a tissue sample to the United States Army Medical Research Institute of Infectious Diseases (USAMRIID), a neighboring military research facility in Fort Detrick, Maryland. After numerous tests, the scientists at USAMRIID were shocked and highly alarmed when they realized the monkeys were infected with Ebola. What was even more alarming was the realization that the virus, unlike its previous outbreak in Zaire and the Sudan, was being transmitted through the air, a much more contagious route compared to direct contact with contaminated body fluids. Fortunately for the residents of Reston and the rest of

North America, this particular strain of Ebola was only harmful to the monkeys. However, Preston clearly illustrates this as a lucky break and warns that we may not be so fortunate next time.

Preston, encouraged by the attention to his article, expanded his discussion into a book. The response of the public to Preston's worked prompted the news media to cover rare hemorrhagic fevers such as Ebola and the dangerous research on these diseases at the only two laboratories in the United States with the capabilities to handle these "hot" agents – USAMRIID and the Center for Disease Control and Prevention (CDC) in Atlanta, Georgia. Upon its release, *The Hot Zone* (Preston, 1995), detailing the Ebola virus and the events in Reston, became number one on the New York Times best seller list. Hollywood quickly negotiated for the rights to the book and other similar projects were launched. The public attention was remarkable:

> By late 1994, newspapers, radio news programs, and television programs were all buzzing about EID's. Then arrival of Richard Preston's *The Hot Zone*, a well-written and truly frightening bestseller that provided the clinching certification of EID's as news, further intensified the media attention to EID's. Popularized by leaps and bounds, and making 'Ebola virus' and 'Marburg virus' household terms, Richard Preston was suddenly all over the news, giving interviews on National Public Radio and elsewhere, and joining such established scientists such as Karl Johnson, Richard Krause, Joshua Lederberg, Stephen Morse, and CJ Peters as a major official news source on EID's. (McGee, 2003, p. 132-133)

As McGee notes, facts about Ebola and other EIDs became widely known despite the lack of an Ebola outbreak for nearly two decades. In an extraordinary instance of timing,

an actual outbreak of Ebola occurred the year following the publication of Preston's book, and the media quickly detailed the unfolding medical crisis in Kikwit, Zaire. The public devoured the news stories, perfectly primed to receive them due to the inordinate media attention to EIDs within the previous years. The "increase of coverage of EIDs prior to the 1995 outbreak of Ebola may well have had a 'priming effect' on media coverage of the Ebola virus, thus contributing to the degree to which it was amplified" (p. 159). Without this advanced preparation, the public reaction to the outbreak would more than likely have been much smaller in comparison.

The discourse of contagion continued for several years, peaking once again as reports of intentional infection in the United States surfaced. In October 2001, less than one month after the terrorists attacks on the World Trade Center and the Pentagon, the first inhalational case of anthrax in the United States since 1976 was reported in Florida. The events that unfolded between October 4 and November 20, 2001, proved to be the first bioterrorism-related cases of anthrax in the United States; a total of twenty-two cases of anthrax were confirmed: eleven cases of cutaneous anthrax, the less-severe form, and eleven cases of inhalational anthrax, five of which ended in fatality (J. Miller et al., 2001). Letters containing a fine, white powder, later determined to be anthrax spores, were mailed to news media companies and government officials, causing anthrax cases in New York, New Jersey, Florida, Pennsylvania, Maryland, and Connecticut. These letters were mailed in two waves. The first wave, postmarked September 18, 2001, and mailed in and around Trenton, New Jersey, included letters addressed to, NBC news anchor Tom Brokaw and the editor of New York Post. In addition to containing anthrax powder, the envelopes contained letters with the handwritten phrases, "09-11-01…This is next…Take

penacilin [sic] now…" (Federal Bureau of Investigation, n.d.). The second wave of letters, postmarked October 9, 2001, and again mailed in and around Trenton, New Jersey, were addressed to Senator Tom Daschle and Senator Patrick Leahy, both to their government offices in Washington, D. C. Similar to the first wave, the envelopes carried white powder and letters with phrases such as, "09-11-01…You can not stop us. We have this anthrax. You die now. Are you afraid?" (Federal Bureau of Investigation, n.d.).

The source of the letters is still unknown. Miller et al. (2001) report that FBI profilers believe the person responsible for the attack is someone who "wanted to send a message, and possibly show off his talents, not necessarily to kill" (CNN.com, 2002, October 4, para. 11). That the letters were mailed to news media companies and government officials cannot be ignored; the perpetrator chose recipients that would evoke a large response and multitude of media coverage. The attention given by the media is a crucial part of bioterrorism's postmodern approach, one that was extremely successful in the case of the Anthrax mailings in that "Americans everywhere were terrified to open their mail" (CNN.com, 2002, October 4, para. 5).

Unfortunately, it is all too easy to slip back into the mode of protecting the public from themselves and from panic, which is what happened in the media coverage of the anthrax attacks in 2001. Because of the circumstances surrounding the Amerithrax infectious event, with the illnesses occurring only one month after 9/11, the resulting media coverage was intense. The major problem with this media coverage was the lack of a consistent, credible message from an official government source. This occurred for several different reasons.

Official messages regarding an outbreak of an infectious disease would typically come from the Center for Disease Control and Prevention (CDC) in Atlanta, Georgia, but in this case the CDC was unable to quickly respond to requests for information from the media because they were discovering scientific evidence as the news was being reported. In the absence of a clear, concise message from the CDC, state health officials stepped into the void, but in doing so they actually created more confusion as some of the guidelines the CDC already had in place were conflicting with the instructions from state officials.

In retrospect, it was also found that the CDC failed to gather technical information from the postal workers at the contamination sites, and in doing so they failed to recognize the significance of what the postal workers could offer in discovering the contagious nature of the anthrax spores. Specifically, postal workers recognized that dust could escape from sealed envelopes when using the machines to process the mail. The CDC failed to account for this and dismissed the possibility that anthrax spores would escape from sealed envelopes. Closer inspection of the equipment later demonstrated this to be possible.

It was not only the American people that failed to receive a consistent message from the CDC, but also medical and health professionals who found it very difficult to get any information from CDC representatives. In Gursky, Inglesby, and O'Toole's study in 2003, they found that "many study participants reported that the media was the most consistent and rapid source of current information for physicians and public health practitioners" (p. 104). Instead of medical officials dispensing information to the media, the reverse occurred during the Amerithrax event as media became the credible source

for medical personnel. Gursky, Inglesby, and O'Toole found that many public health officials dismissed media inquiries because they did not consider them to be a priority and responding to the requests was time consuming. CDC investigators failed to return phone calls in a timely manner and instead focused their efforts on studying the scientific aspects of the outbreak without communicating their findings. The lack of response from CDC scientists can be attributed to the nature of scientific inquiry, because many times scientific information will be reviewed by peers and exposed to a strenuous process to ensure validity. Because time was of the essence and investigators did not have the luxury to vet their results, "some health officials were afraid to say anything in the midst of an unfolding investigation during which the facts changed so quickly" (Gursky et al., 2003, p. 105).

Since reporters did not have a singular source to give them information regarding the anthrax attacks, they were forced to find this information using other, less credible sources. During their research, Gursky, Inglesby, and O'Toole (2003) interviewed one reporter that commented:

> It would have been useful to have a single person, point of contact, or continually updated website. They didn't know what was safe to say… things were hush-hush. The press relied on back channel contacts. We wanted to make sure we did not embellish. This took effort. The job of good reporting is a function of the reliability of data. There were many agencies involved that had conflicting information. You don't want reporters making scientific judgments. (p. 106)

When lacking a consistent, reliable, authoritative source about the anthrax attacks, reporters we forced to find an alternate. This less than desirable situation created a deluge of inconsistent information that contributed to the sense of fear throughout the nation.

Another problem that was related to this was the public perception that the CDC and other public health sources were constantly changing the advice they were giving the public of how to control the infection. The lack of a consistent message from medical officials did considerable damage to credibility of the CDC and other responsible government parties. Because the events of the biological attacks were unfolding in real time and instantly available to the news audience, it was a new arena for medical officials, the media, and the American people.

It was not that public health officials did not want to disseminate information to the American public; it was that the White House administration effectively prevented them from doing so. Not surprisingly, one reaction to the events of 9/11 was an effort to coordinate all information related to potential terrorist activities through a centralized federal department. Although this may have been an essential move to keep abreast of terror threats against the United States, it had some unfortunate consequences for the flow of information to the public:

> [T]he moment the planes hit the World Trade Center and the Pentagon, all information on terrorism was consolidated through the White House and cabinet secretaries. For reporters, this resulted in an information blackout from the CDC and other health information agencies that they had long relied upon as sources. (Franke-Ruta, 2002, p. 28)

During the coordination of information about the anthrax attacks, this new White House policy caused massive congestion in releasing accurate and timely information to the press and the public.

> Famous for its message discipline, the White House had insisted that its [Health and Human Services] Secretary be the lone voice on bioterrorism. Yet, from the outset, [Secretary Tommy] Thompson had made a host of elementary errors… [M]isstatements quickly eroded Thompson's credibility. But reporters had no one else to turn to. "The feds basically put a gag on the local officials and the state officials, too," recalls Sanjay Bhatt, medical reporter for *The Palm Beach Post*. This gag order extended to CDC officials, as well. "All questions were directed to Atlanta or Washington, and for about a week we didn't get any response from either to our questions, which we submitted both in writing and over the phone." During the first weeks of the largest biological terror attack in U.S. history, when the need for accurate public-health information was at a premium, government experts were effectively silenced. (Franke-Ruta, 2002, p. 25)

Information was flowing from the CDC at a slow trickle, contributing to a national panic that swept across the nation. Evidence of this panic was seen with consumer demands for ciprofloxacin hydrochloride (Cipro) and gas masks which quickly depleted existing supplies. Luckily the attack was relatively limited and anthrax cases were somewhat localized. If the attack had been widespread, the runs on antibiotics and protective equipment could have created a significant shortage in supply which may have been desperately needed if the attacks had been ongoing.

Even when local public health officials had credible information to share with the public, at times they were prevented from doing so.

> Several within the public health community stated that there were restraints placed on them regarding what information could be released. One local public health official stated, "My mayor told me what I could say and what I could not say to the media." (Gursky et al., 2003, p. 105)

The White House's communication policy regarding bioterrorism information reached local levels of government as well.

By withholding information on a daily basis from the media and therefore the public, the situation worsened. Gursky, Inglesby, and O'Toole (2003) found that:

> There was no evident media strategy within the federal government for several weeks into the crisis. The irregular and at times confused interactions between the federal government and the press during the crisis resulted in a loss of government credibility and an increasingly aggressive media feeding frenzy. (p. 109)

The lack of reliable information fostered an escalating sense of panic and a need for aggressive action on the part of news reporters to uncover the truth about the potential danger to the American public.

With the not too distant memory of the terrorist attacks of 9/11, each of these factors converged and heightened the fear and anxiety in the people:

> It is apparent that responders, the media, and the public were frustrated and confused by the evolving understanding of the risks posed by anthrax-laden letters

> and by shifting recommendations about who might be at risk for becoming sick and how such people should be treated…
>
> It is likely that recognition of the nature of and appropriate response to future bioterrorist attacks… will unfold over time. This is a difficult lesson to learn in an age of 24/7 media coverage and expectations of instant answers. The media and the public must understand that the need for rapid decisions may be at odds with the desire for complete answers. (Gursky et al., 2003, p. 108)

The confluence of the continuous media coverage of a bioterrorist attack, the demand from the public for answers and guidance, and the lack of organization at the federal level when responding to an emergency, created an infectious disease event that was difficult for the country as a whole to manage.

The media frenzy helped create a suspicion of any powders that remotely resembled powdered anthrax spores. According to the Illinois Department of Health, 1,500 samples were submitted to the laboratory for testing, creating an unusually large workload for lab personnel (Dworkin, Ma, & Golash, 2003). Fortunately, all 1,500 samples tested negative for anthrax. In reviewing this large sample submission, Dworkin, Ma, and Golash concluded that the number of submissions was associated with concurrent media coverage since an increase of submissions correlated with an increase in anthrax stories in the media. This could have been detrimental to the entire community if it had been a widespread attack because resources such as available personnel and laboratory supplies would have quickly dwindled.

The tense response to health reports on the news extended to cover natural outbreaks in addition to terrorist activities. Late in 2002, reports began to appear in the

news of a mysterious contagious illness in Asia, particularly Hong Kong. As the illness spread, it became evident that this mystery illness was, in fact, lethal. The outbreak of SARS, Sudden Acute Respiratory Syndrome, had begun. With the recent experiences of the terror of 9/11 and the anthrax attacks in minds, some began whispering the possibility that SARS was a biological weapon. Although this was later discounted, fear of SARS spread more quickly than the syndrome itself. This epidemic of fear was fueled by images of Chinese people with masks across their faces, desperate to prevent acquiring the disease. Most travel to and from the area ground to a halt as fear spread across the globe. Even in small communities in the United States, some were fearful of contracting SARS and avoided eating in Chinese restaurants.

Regardless of efforts to use the media to further political agendas, the consumers of the media would not be receptive to manipulative means without social and historical experiences serving as a foundation to interpret and integrate visual images into public reaction. Past experiences, both personally and through media outlets, with illnesses and diseases such as *Salmonella,* AIDS, weapons-grade anthrax, and SARS predispose many American viewers to incorporate additional news reports and accompanying images of illness into an existing emotional stress about personal health and safety. Currently, the emerging infectious disease media spotlight on the threat of pandemic influenza (bird flu) is enveloping these past experiences to propagate high levels of anxiety around the globe. Researchers in cultural studies must consider the context of these experiences in contemplating the role of the media in the public's response to illness in a climate of fear in American society.

CHAPTER 2

A CULTURAL LENS FOR READING MASS MEDIA

The multiple sources of ideas centering on the fear of illness contribute to the discourse of contagion and impact our reality. Many of these sources were a part of the popular culture landscape, such as science fiction novels, non-fiction books, television programs, and motion pictures. Too often, popular culture is dismissed as entertainment with little lasting cognitive value, but poststructuralist thought effectively counters this claim, placing popular culture in the position of a legitimate site of learning.

Poststructuralism is a philosophical movement that originated in France in opposition to the structuralist and humanist philosophies. Michel Foucault (1978/1990), who is often associated with the emergence of poststructuralist thought despite his structuralist tendencies, suggests that power and knowledge are intertwined. Poststructuralism expands the structuralist focus on the importance of language. With poststructuralism, language is of extreme consequence; as Derrida (1967/1976) suggests, nothing lies beneath language. All attempts to interpret, explain, and understand ideas and meanings are inseparable from language. Even conscious thought incorporates language as internal monologue. This leads to the counter to structuralism, since "the systems and structures structuralism worked to reveal are themselves caught up in language" (Pinar, Reynolds, Slattery, & Taubman, 1995, p. 461). The permeation of language throughout elements of society allows poststructuralists to insist that everything is text – everything can be read, interpreted, and absorbed into a discourse.

Discourse is an extensive practice that, through discussion, becomes the object of what is being discussed. In essence, reality is fashioned by verbalizing it. Discourse is a part of structuralism as well as poststructuralism, but:

> [t]he difference… between the structuralists' set of relations, structures or systems, and the theory of discourse, is that the former are seen as foundational and invariant, while the latter proposes that discourse is historically and socially contingent, and that the analysis of discourse must remain at the level of the signifier. To analyze a discourse is not to say what it means but to investigate how it works, what conditions make it possible, and how it intersects with nondiscursive practices. (Pinar et al., 1995, p. 462)

Pinar et al. explain that with poststructuralism, "the question [shifts] from who has knowledge/power to how, and under what conditions, particular discourses come to shape reality" (p. 463). Although it is important to analyze the discourse of contagion to understand and expose who controls what is deemed worthy of scientific discussion, poststructuralism helps to move beyond identifying power holders in order to investigate how this discourse is not merely a reflection of reality but also a major impetus in constructing our reality.

When embarking upon discourse analysis, it is critical to recognize that the language that composes the discourse is spatially bound to time and place, to historical and social context. These limitations of the system of language can be easily discerned by comparing meanings as they change over time. According to Ferdinand de Saussaure, language is a system of signs which is composed of the signifier and the signified. The signified is the spoken or written word while the signified is the concept or correlated

meaning of the signifier. For instance, if the sign is a dog, the signifier is the written or spoken word “dog” and the signified is the meaning of “dog.” The image that comes to mind with the “dog” signifier tends to be different for each person, sometimes to the extreme (one person’s standard image of “dog” may be a Chihuahua while another person’s “dog” may be a Great Dane). Additionally, sign systems are specific to time and place – that is, they can (and do) change. A discussion of “football” in Atlanta is quite different from a similar discussion in London. The mention of “cigarette” in the 1940s often conveyed images of an item considered socially trendy, while today it often conjures images of lung cancer and death. Because the meanings of signifiers change, the term “free-floating signifiers” is often used. Since signifiers change over time, my discussion of the priming effect that occurred to predispose Americans to support the invasion of Iraq is deeply rooted in the cultural context of the time.

Recognizing the power and saturation of language is a strength of poststructuralism, for it allows the examination of reality in an alternative manner. Considering the power of language, it is difficult to ignore the implication that both knowledge and perception of reality are manipulated by members of the dominant discourse. In my research, the view that everything is text is especially useful for it allows me to critically examine various cultural elements, such as television and film, as curricular texts. Everything I am exposed to in my daily life is text, text that is read and incorporated into my existing knowledge base. I recognize these nontraditional texts for their potential to influence readers in various ways. They are not simply a form of entertainment.

The topic of how science is constructed for delivery through mass media and the possible interpretations of the content of this science curriculum can be distinctly tied to issues of representation. The debate about representation centers on the relationship, or lack thereof, between reality or truth and the appearance of reality or truth. The classical theory of representation stipulates that a relationship exists between that which is real (commonly referred to as q) and the image of the real (commonly referred to as p). The image, p, mirrors what is real, q. When it comes to which of the two – p or q – are more important, understanding reality is deemed more worthy since the image is only a copy of what is real and is therefore of less worth. An imitation is less valuable than the real thing. So for classical theorists, the image is often pushed aside in order to examine the real or the truth. Images only interfere with seeking the truth and should be quickly set aside.

The postmodern approach to representation is in direct opposition to this classical understanding. As I previously mentioned, postmodernists illustrate that a person cannot separate herself from her surroundings, cannot step outside of signs and what is being signified. Because of this limitation, a person cannot be certain of anything, for any arguments to define certainty are based in language and are therefore suspect. I cannot say with certainty that p corresponds to q, and since I cannot say this, the values associated with p and q are capable of trading places. Q becomes less important than p because q is uncertain. Understanding the image is much more valuable. Since I am immersed in a culture of language, it is this culture that constructs an image, constructs what I see and how I understand what I see. “What we see is always already constructed

through culture glasses. But these glasses do not help us see better, they convolute and complexify what we see" (Morris, 2001, p. 68).

It is the postmodern twist on representation that lends itself to my discussion on contagious discourse. Culture constructs what we see at the birth of scientific endeavors – the way science is conducted and what is deemed important in the scientific paradigm of the day is all constructed through language within cultural boundaries. Bruno Latour (1987; Latour & Woolgar, 1979) elaborates that all activities in science laboratories center on the social construction of knowledge and that many social elements, such as funding sources, manufacturers of scientific instruments, and scientific journals, all play a part in what is and becomes science. Culture also constructs what we see since it becomes important in defining what passes through the filter of the mass media. In John Weaver's (2005) discussion of representation, he suggests we should abandon "any notion that information can be filtered in a non-ideological or unbiased way. As long as humans exist, there will be bias" (p. 48). This filtering procedure is a highly selective process that determines what images are constructed and conveyed to the public audience.

As with representation, the culture of language may also determine how we interpret what we see. Crafted images from television and film industries, news sources, and corporations are far from neutral. Each text is created with a specific purpose in mind, such as images of salmonella-infested juices from raw chicken sitting on your kitchen countertop waiting to infect unsuspecting loved ones unless you purchase Clorox antimicrobial kitchen wipes to disinfect your home.

A Cultural Curriculum

The elements of popular culture – film, television, music, books, magazines, video games, the internet, advertisements, theme parks, and fashion, as well as cultural events such as beauty pageants and shopping – are a delicate, intricate web of reflection, influence, pedagogy, and documentary. Many scholars acknowledge the role of popular culture's influence on members of society. Giroux (1995) strongly asserts this notion, explaining:

> Films both reflect and shape public culture. They cannot be defined exclusively through a notion of artistic freedom and autonomy that removes them from any form of critical accountability, given the important role they play in shaping public life…. Hollywood film cannot be regarded as simply a form of entertainment. (p. 311)

Others argue that in our postmodern society, popular culture texts provide the prevailing mode of communicating knowledge to the general public. Benjamin R. Barber implores: "It is time to recognize that the true tutors of our children are not schoolteachers or university professors but filmmakers, advertising executives and pop culture purveyors. Disney does more than Duke, Spielberg outweighs Stanford, MTV trumps MIT" (as cited in Giroux, 1999, p. 63). It is vital for scholars, politicians, and parents alike to recognize that film, television, and other popular cultural objects "do more than entertain, they offer up subject positions, mobilize desires, influence us unconsciously, and help to construct the landscape of American culture" (Giroux, 2002, p. 3). Images from these sources are viewed by the consumer and interlaced with previous experiences to become a part of each person's knowledge, part of the strata of an individual's epistemological and

ontological foundations. It is from the experience of these images, whether they are fiction or reality, that a person will draw to interpret new ideas and events, and to ultimately make critical decisions that not only impact her life but also may impact many others. As such, we must examine popular culture for what it truly is, a site of learning, curriculum, or what is referred to as "edutainment."

Film, television, magazines, and other platforms of popular culture are certainly educational in the traditional sense, in that lecture-type information is conveyed from teacher (a television show, for example) to the student (the viewer of the television show). Documentaries on The History Channel and the Discovery Channel and "how to" shows such as programs on the Food Network and Home and Garden Television abound with factual knowledge to convey to the television audience. These types of shows can be very popular, such as the Discovery Channel's Shark Week which draws millions of viewers. News channels such as CNN and Fox News broadcast current events around the clock, and millions tune in to the morning and evening news shows on the broadcast networks each weekday to find information about recent happenings in politics, world events, entertainment, and so on. There is a plethora of information easily available on television, in magazines and newspapers, and on the internet, from today's stock market values to how to make a homemade pipe bomb.

In the United States, the general public devours science more now than ever before; for the most part, this occurrence is linked to consumption of popular culture texts. Television programs that regularly incorporate science methods and jargon are extremely popular and dominate broadcast network programming: *CSI*, *CSI: Miami*, *Without a Trace*, *Cold Case*, *Law & Order*, *Navy NCIS*, *Crossing Jordan*, and *ER* are a

few examples. Science reports are regularly a part of the evening news, magazines, and newspapers. Even widely popular fad diets, such as the Atkins Diet and the South Beach Diet, use scientific claims to provide validity to their weight-loss regimens.

However, cultural objects do more than deliver information at face-value. Consumers of popular culture learn values and behaviors from these texts as well that mold reality. One of the most popular and distressing claims is that consumers, particularly youth, learn violent behavior from films, television, and video games. “Our young people,” Smith (2000) explains, “are constantly bombarded with visual images of violence through various forms of popular culture and mass media. And these various forms of popular culture become absorbed, unquestioned pedagogy” (p. 185). While media images of violence are problematic and potentially contribute to the escalating levels of violence that are considered acceptable in the United States, Julie Webber (2003) cautions against attributing rising adolescent violence to a single cause, explaining that the recent eruptions of violence in schools is a highly complex interplay of violence in the media, the hidden curriculum, and resistance theory.

Other behaviors are absorbed from popular culture as well. Since many popular culture texts are vehicles for and products of American capitalism, readers absorb much of the consumer culture from these texts. People are constantly bombarded with advertisements, both overtly through commercials on television or before a film, and covertly through careful product placement within a film or television program. Many television commercials are marketed towards a specific target audience associated with specialty programming or channels. For instance, children are mercilessly targeted with toy commercials during Saturday morning cartoons and on child-oriented networks; ads

for dishwashing detergent and feminine products accompany daytime soap operas; and ads targeting the male demographic, including commercials for Enzyte, the "over-the-counter one-a-day tablet for natural male enhancement" and the newest action video games for PlayStation 2 and Xbox, appear on SpikeTV, the self-proclaimed men's programming channel. Similarly, product placement occurs in various degrees; contestants on reality television shows such as *Survivor* receive brand-name rewards that include Doritos, Mountain Dew, or a new Chevrolet, all promoted by the show's host, while nearly every label that is legible in a film is specifically placed in the shot to satisfy a contractual agreement. Pepsi, for example, is a commonly placed product in a number of films and television programs. The American consumer culture is an integral part of popular culture and constantly dictates how we (re)define ourselves based on what we own and what we desire, partially driving identity formation for many Americans.

Since popular culture is not extractable from knowledge production and thus not extractable from curriculum studies, popular culture texts must be critiqued. This is accomplished by examining two interconnected spheres: (1) the production of popular culture from the creator to the text, which includes questions of what and whose knowledge is incorporated and why the particular knowledge is chosen to be included; and (2) the reception of popular culture from the text to the reader, which proposes complex questions of how the text influences the reader as individual and the society as whole and how the text shapes reality.

Popular Culture Production: From Creator to Text

Popular cultural objects do, in part, reflect society. Successful television programs such as *Everybody Loves Raymond*, *Friends*, and *Law & Order* include characters with

relationships and problems that are in common with many Americans, and plot lines in these programs are often realistic, or, in the case of *Law & Order* and other cop shows, loosely based on true stories. Many books, films, and magazines portray an American lifestyle and culture common to many people. Because of this, some curriculum scholars successfully use popular culture to attempt to understand the everyday lives of students and teachers. For example, John Weaver (2004).examines the Nickelodeon television network and suggests it is the best source for observing how youth make sense of and react to their world.

This reflection of reality can also be used to perpetuate the ills of society and the position of those in power. It is actually a reflection of the dominant ideology that is used to reproduce the status quo. For example, Giroux (1999) illustrates how "Disney's books, records, theme parks, movies, and TV programs produce identifications that define the United States as white, suburban, middle class, and heterosexual" (p. 127). These characteristics, presented as norms across mainstream media, become a measure for one's economic and societal wealth as well as a foundation for one's identity. Perpetuating certain stereotypes in popular culture benefits the white, male, ruling elite by suppressing others:

> Fed by widespread stereotypical images of black youth as superpredators and black culture as the culture of criminality, minority youth face not only a criminal justice system that harasses and humiliates them but also a larger society that increasingly undercuts their chances for a living wage, quality jobs, essential social services, and decent schools. (Giroux, 2001, p. 44)

It is therefore imperative for cultural and curriculum theorists to critique popular culture texts for power plays and clandestine motives that benefit ideological hegemony of the dominant group.

Fortunately, popular culture is not only a site of reproduction, but also is a site of resistance. John Weaver and Toby Daspit (2000) suggest this is an important opportunity to approach these texts as critical pedagogy, for "[w]hen we accept popular culture texts as a form of critical pedagogy, we begin to focus on the ways in which these texts challenge power blocs while creating alternative visions of the world" (p. xxvi). Challenging power blocs through popular culture is currently gaining much attention in the United States as a few Hollywood filmmakers have come to recognize its political and financial potential. As of July 25, 2004, Michael Moore's documentary *Fahrenheit 9/11*, a film that takes aim at President George W. Bush, has grossed $103 million in five weeks of release, making it the highest-grossing documentary in box office history. The political ramifications of the film remain to be seen, as Corliss (2004, July 12) explains:

> *Fahrenheit 9/11* may be the watershed event that demonstrates whether the empire of poli-tainment can have decisive influence on a presidential campaign. If it does, we may come to look back on its hugely successful first week the way we now think of the televised presidential debate between John Kennedy and Richard Nixon, as a moment when we grasped for the first time the potential of a mass medium – in this case, movies – to affect American politics in new ways. If that's the case, expect the next generation of campaign strategists to precede every major election not only with the traditional TV ad buys but also with a scheme for

> the rollout of some thermonuclear book, movie, CD or even video game, all designed to tilt the political balance just in time. (p. 64)

Although Moore's film is an example of an outwardly identifiable form of political resistance, other films and popular culture texts contribute to the effort of creating alternative visions of reality, such as *Stand and Deliver*.

Resistance in popular cultural texts can be successful, but an interesting event sometimes occurs when resistance is displayed in popular culture. The activities that are at first defined as resistance shift to be incorporated into the status quo and actually assist reproduction. According to Hebdige (1979):

> The media, as Stuart Hall (1977) has argued, not only record resistance, they "situate it within the dominant framework of meanings" and those young people who choose to inhabit a spectacular youth culture are simultaneously returned, as they are represented on T.V. and in the newspapers, to the place where common sense would have them fit (as "animals" certainly, but also "in the family," "out of work," "up to date," etc.). (p. 94)

The defiance of youth subcultures Hebdige describes are (re)incorporated as problems in the social reality and are "dealt with" by recognition, dismissal, or rebuke by the dominant group, becoming a part of the dominant ideology. To be successful as resistance, it becomes necessary for movements of resistance to constantly evolve, to outrun the engulfing nature of reproduction. For curriculum studies, this continuous evolution requires examining resistance movements in context to interpret meanings and knowledge production.

Finally, before moving from the topic of production of popular culture texts, I must emphasize that all texts are created based on the interpretation of the text's creator. Books, magazines, television programs, films, and most other popular texts are edited before becoming a final product, and the editing process ultimately constructs reality. Samuel Weber (1996) discusses his interpretation of the impact of television and concludes the small screen is important because "it screens, in the sense of selecting of filtering, the vision that is watched" (p. 122). In his most recent work, John Weaver (2005) analyzes Weber's perception of how television influences our lives, and further explains that television "decides what we can see of the world. Television shapes the world because it selects what parts of the world we will see" (p. 57). Sardar and Van Loon (1998) explain this notion using television news as an example, arguing that "despite its immediacy, [television news] is a mammoth feat of social construction. Even the most basic news footage has to be edited together... All news is professional construction of social reality" (p. 159). When readers are exposed to these edited texts, the information they receive – the information that may become a part of their knowledge base – is completely constructed by the author and may have little to do with one's reality. Within the framework of representation, "meaning or truth is never natural in its existence but constructed, and these constructions are situated within a historical context shaped by those who control the medium" (Weaver, 2005, p. 48). Authorial construction becomes even more suspect when motives of the construction are considered. Michael Moore's film is his construction of social reality, much of which is controversial and, according to his critics, some of which is questionable. He clearly expressed his primary motive in making *Fahrenheit 9/11* was to unseat President Bush in the upcoming

election. Other texts and authors tend to be more elusive with primary agendas, although it is easy to speculate that some motives include personal fiscal profits, political agendas, and reinforcing agendas of the ruling elite.

Closely related to the topic of motive for selection of information to include in a text is the issue of media control. The Telecommunications Act of 1996 allowed for media mergers and buyouts; as a result, "U.S. media is dominated by fewer than ten conglomerates, whose annual sales range from $10 billion to $27 billion" (Giroux, 1999, p. 45). Giroux (2001) describes how this situation is extremely problematic because when:

> …conglomerates, such as Disney, Viacom, Time Warner, and Bertelsmann, gobble up television networks, radio stations, music industries, and a host of other media outlets, it becomes more difficult for stories that are critical of these concentrated industries to see the light of day. (p. 6)

In *The Mouse that Roared*, Giroux (1999) highlights a specific example of how such practices can inhibit free media:

> …ABC News president David Westin decided to kill a proposed *20/20* television piece based on Peter and Rochelle Schweizer's book, *Disney: The Mouse Betrayed*, a scorching right-wing critique of ABC's owner, the Walt Disney Company. The implications of such actions are clear: investigative reporters and the news division cannot do stories critical of their boss, the Walt Disney Company. As one veteran ABC correspondent, speaking on the condition of anonymity, stated in the *Philadelphia Inquirer*: "The nightmare is that the news

> division and our ability to be reporters would appear to be compromised because of our ownership." (p. 45)

Not only is the American public prevented from reading accounts in certain media outlets that are critical of powerful conglomerates, but also they are rarely exposed to images of the war in Iraq that create the possibility of negative spin (Franken, 2003; Moore, 2003). The following excerpt from a recent article in *Time* reveals how Americans are kept in the dark:

> When [General Richard Myers, Chairman of the Joint Chiefs of Staff] learned several weeks ago that CBS was about to air the [Abu Ghraib] pictures, he persuaded the network to delay the broadcast for two weeks. An earlier telecast might jeopardize the safety of Americans held hostage by Iraqi insurgents, he said, and further inflame anti-U.S. tensions in the country. (McGeary, 2004, May 17, p. 33)

Although this delicate situation included potential dangers for American hostages and an increase in anti-American sentiment when the report and accompanying images were released, it demonstrates how information is withheld from the American public by powerful people in Washington, D.C. The general public must realize that knowledge is controlled by the government, media executives, and editors of all form of mass media.

In considering the contribution of the news media to the construction of social reality, it is important to recognize that news stories are selectively chosen for not only newsworthiness but also for entertainment or sensationalist value. For television news in particular, the images that compose news items, including images of illness and disease, are sensationalist in the manner that they capitalize on a common fear of illness and

disease to grab the consumers' attention and increase ratings. However, to the credit of many television news shows and channels, news reports featuring pathological outbreaks are crafted to minimize the likelihood of inciting panic in their viewers. It is the fine line between creating awareness and creating panic that contributes to the complexity of media's role in the public response to illness.

Popular Culture Reception: From Text to Reader

The second sphere in critically examining educational elements of popular culture texts centers on the reception from these texts by the reader. Popular culture texts have much influence on the daily lives of many Americans, shaping their reality of the world in which they live. "No longer is popular culture simply a reflection of the world around it. Rather, it serves as an active, if not the primary, shaper of social reality" (Jenkins et al., 2002, p. 39). Again, it is this constructed reality that demands extensive vetting to weigh the consequences of what is often misconstrued as mere entertainment.

Popular culture should never be simply dismissed as fodder for the proletariat or pure amusement with no educational value. Kellner (1995) notes that "images, sounds, and spectacles [in popular culture] help produce the fabric of everyday life, dominating leisure time, shaping political views and social behavior, and providing materials out of which people forge their very identities" (p. 1). The elements of popular culture, often read everyday by many people, have a power of influence which is so strong that it affects how we behave, what we think, what we know, what we are. The power of influence shapes a wide range of societal norms and behaviors, from popular hairstyles and fashions, to common catchphrases and gestures, to "normal" relationships and "acceptable" notions of morality. For example, Joe Kincheloe (2004) provides a critical

inspection of how a staple to contemporary American society – McDonald's – affects the culture of children, while Shirley Steinberg (2004) illustrates the various ways in which Barbie contributes to the construction of childhood consciousness. Popular cultural texts are teeming with opposing political views, and only what is chosen as newsworthy by reporters and news directors, by film directors, by book authors, or by other cultural creators such as powerful corporations with special interests, will become a part of the political conversation. I return to Giroux's (1999) explication of Disney as an example: "The enormous ideological and material power that Disney exercises over civic culture raises important questions about the fate of democracy given such unbridled corporate power" (p. 25). Corporations, in addition to political fare from media outlets such as *Fahrenheit 9/11*, *The O'Reilly Factor* and other programming on the Fox News channel, news media coverage of the Presidential campaign, the war in Iraq, *The 9/11 Commission Report*, and best-selling books from political pundits like Ann Coulter and Al Franken, continuously shift the political landscape and personal political convictions, all based on a constructed social reality.

Not only do popular culture texts influence views of current events, but they also (re)educate readers to (re)shape our history, our public memory. Disney is not innocent of this particular offense, as Giroux (1999) elaborates:

> Disney has also become the nostalgia machine par excellence and offers its visitors a very positive view of history, informed by what one imagineer terms "Disney realism, a sort of utopia in nature, where we carefully program out all of the negative unwanted elements and program in the positive ones." This whitewashing of history – as represented in Main Street, USA, Adventureland,

> Frontierland, and even in the updated Tomorrowland of 1998 – reaffirms a past that appeals to middle-class families, a past filled with optimism, a past that implicitly proclaims the triumph of white culture." (p. 41)

History whitewashing occurs in other places, by other media. Reynolds and Gabbard (2003) demonstrate how the film *We Were Soldiers* attempts to rewrite the history of American soldiers in the Vietnam War, focusing on nostalgic notions of military officers and enlisted men as family men (as they were all male soldiers in the film) sent to fight a noble war. The danger with popular culture reshaping history lies in the efforts to choose only to highlight and remember the positive elements of our past instead of allowing each generation to fully embrace our mistakes and missteps and to learn from them. Instead, if companies like Disney are allowed to continue unabated, each future generation will be exposed to more and more "Hollywood history" and will frame these experiences when exploring history and current topics in historical context.

This idea of interconnected readings brings me to the final point I want to stress about the reception of popular culture texts. Elements of popular culture and mass media have permeable boundaries; they function in concert with one another. "No medium today, and certainly no single media event, seems to do its cultural work in isolation from other media, any more than it works in isolation from other social and economic forces" (Bolter & Grusin, 2002, p. 15). This is extremely important to consider when critically examining popular culture texts, for "[d]istinctions among texts are as invalid as the distinctions between text and life. Popular culture can be studied only intertextually, for it exists only in this intertextual circulation" (Fiske, 1989, p. 126). Thus, curricular aspects of popular culture should be inspected in historical and social context and in context with

different mediating modes. In my research of popular culture texts, I attempt to place ideas in context. I not only examine the possible interpretations of a particular theme in a film, but I also consider any history or concurrent events a reader would likely associate with the theme as well as related popular television programs, books, and websites.

As long as popular culture texts are not discussed as curriculum by most viewers, the power of the medium to shape our reality remains unchanged. But if we recognize the educational implications, if we bring the peril of this unrestrained power to the daily conversation, we lessen the unsupervised influence of the government, media conglomerates, powerful corporations, and authors of texts on society.

CHAPTER 3

DEVELOPING A CONTAGIOUS CURRICULUM

In 2005, the hot infectious disease topic of the moment was the rising threat of a bird flu pandemic. Alarming stories appeared on the evening news, in magazines, and on the internet describing a potential worldwide disaster in the making. The White House contributed to the discussion as President Bush committed resources to preparation activities and stockpiling medical supplies. At Princeton University on December 8, 2005, Senate Majority Leader Bill Frist, a physician, painted the scene in an address to the National Press Club:

> Think of a fast-moving, highly contagious disease that wipes out 50 million people. Half a million in the U.S. The killer pandemic claims more victims in 24 weeks, than HIV-AIDS has claimed in 24 years. In the United States – the most developed nation in the world – bodies pile up in the streets. There aren't enough morticians to bury the dead. Nor are there enough doctors and nurses to tend to the sick. Normal life stops. The churches close, the schools shutter. Communications and transportation grind to a halt. The public succumbs to hysteria and panic. Police protection fails. Order decays. Productivity dies. Sounds like science fiction, doesn't it? But what if I told you, it already happened? What if I told you it was the pandemic flu that swept across America and around the globe in 1918? Or if I told you that this glimpse into the past might be a preview to our future. A viral pandemic is no longer a question of if, but a question of when. (para. 4)

Infectious disease discourses that grab the collective attention of the country often do so through mass media conduits. Actual events are featured on television news segments and documentaries, nonfiction books, web pages, radio broadcasts, and magazine articles while fictionalized stories about infectious diseases appear in feature films, novels, and on television programs. Whether or not the story is fiction or nonfiction is mostly irrelevant as most attention towards infectious disease topics in the mass media helps to sustain the ongoing discourse about contagion. Since these media outlets reach a large audience and play a large part in the selection and presentation of the infectious disease curriculum, this dissertation largely focuses on the role of mass media in constructing and delivering a contagious discourse that ultimately contributes to how our changing behavior alters our connection with the microbial world.

A Distorted Lens

Many people assume the media attention towards infectious diseases is based on actual current events, such as a current outbreak in the United States or somewhere across the globe. However, this is not entirely the case. In many instances, media coverage is partially or even entirely due to stories that originate within the media industry – in films, books, on television, or other popular culture sites – in the absence of an active occurrence. A review of the sudden interest in Ebola during the 1990s illustrates this. In the early 1990s, a massive amount of media attention was aimed at Ebola, a rare virus that is mostly prone to outbreaks in tropical regions. Although an outbreak had not occurred for nearly two decades, Richard Preston's popular article in *The New Yorker* about a strain of Ebola infecting monkeys at a Reston, Virginia animal facility sparked a disproportionate amount of coverage of and interest in Ebola. When an actual outbreak of

the virus occurred in Kikwit, Zaire in 1995, journalists swarmed to the area to continue its obsession with the latest "hot" story. In this case, an increase in media attention to Ebola actually preceded real world events as Preston's article was published a full three years prior to the incident in Zaire.

Coverage of the Ebola Zaire outbreak far exceeded the size of the outbreak of this rare virus in the human population. Interestingly, it is somewhat common for news coverage to be disproportionate to a disease's incidence, with wide coverage for small outbreaks or limited coverage for global pandemics. McGee (2003) illustrates this phenomenon as it occurred during a marked increased in smallpox stories in the 1990s:

> The rise in news coverage about smallpox reveals an important point about news coverage of infectious diseases: this coverage is not proportional to the number of people infected by a disease, and may bear no relationship to incidence or prevalence. Smallpox, a disease that has not killed a single person during the 1990's, received far more media coverage than outbreaks of *Neisseria* meningitis in West Africa in 1995 and 1996 that killed tens of thousands of people. News agendas concerning infectious diseases thus are not determined entirely by world events, but are also set by political and economic agendas, cultural concerns, and the influence of other media agents. (p. 146)

As previously described, the most recent demonstration of unbalanced coverage can be seen in the attention towards avian influenza. Public health officials have launched a media campaign to prepare the United States for a possible pandemic, although as of September 19, 2006, 247 people have been infected with "bird flu," and 144 people have died from the disease. Human cases have recently been confirmed in Azerbaijan,

Cambodia, China, Djibouti, Egypt, Indonesia, Iraq, Thailand, Turkey, and Vietnam – not a single case has yet been reported in Europe or the Americas (World Health Organization). Thus far, the media campaign, riding on the fresh memory of the devastation caused by Hurricane Katrina in Louisiana and Mississippi and the disastrous emergency response from all levels of government, has been successful in alarming much of the American public. News coverage of the nation's level of preparedness is frequent. In a speech at the National Institutes of Health on November 1, 2005, President George W. Bush requested $7.1 billion in emergency funding from the U.S. Senate towards preparations for a pandemic flu emergency (Office of the President of the United States).

Although an increase in media attention towards infectious diseases may result from a book, news report, or other cultural outlet, it predictably increases after a celebrity becomes associated with the story. Rock Hudson's revelation that he was suffering from AIDS changed the level of coverage of HIV as well as the nature of the coverage as it began to be more sympathetic towards those infected, viewing them as victims rather than social outcasts. More recently, Oprah Winfrey's public comments against the American beef industry regarding bovine spongiform encephalitis (BSE), commonly known as Mad Cow disease, focused a media spotlight on the issue. "Once again, the United States media proved mildly interested in a serious infectious disease issue, but not really excited about it until a TV or movie star got involved" (McGee, 2003, p. 173). As my mother, a registered nurse and a regional administrator for the South Carolina Department of Health and Environmental Control, recently comment "if only a celebrity had TB." Attention towards the disease may be a desirable effect of celebrity

involvement, but public health officials should not be forced to seek a celebrity endorsement to elevate the awareness of a particular infectious disease.

Considering these points, it becomes apparent that the diseases that are covered by the mass media are chosen in part by those who construct the message. Essentially, the discourse of infectious disease in the public arena is selected. Since many players in the media industry are enormously concerned with attracting attention, an audience, and advertising dollars, the selected illnesses tend to be those viewed as exciting or new or those where a new treatment or prevention method has been found (Hall, 1994, October 30). Gillian Sandell points out that the trendy, "hot" microbes receiving most of the attention are not the diseases that should cause the greatest concern:

> Popular culture continues to claim that these new micro-organisms are the most deadly menace to face in the human race. Writers have found, moreover, that such diseases provide lucrative and compelling fodder for mass-marketed entertainment. Yet, as many health workers argue, tuberculosis and AIDS present a far more serious threat than the more 'exciting' Ebola or Hanta, and the US would do well to acknowledge the spread of equally deadly but less 'dramatic' diseases. (p. 144)

These less dramatic diseases also tend to be the chronic illnesses that are accompanied by complex social issues and are often marginalized since medical solutions for these diseases require changes in the socioeconomic structure in order to be effective. The lack of focus on these infectious diseases, such as malaria and tuberculosis, which have a higher rate of incidence in third world countries and among the poor, is intentional as they are not new and exciting and tend to leave the audience despondent due to the

undeniable and uncomfortable link to the social and economic status of the affected individuals. The irony in this situation comes from the realization that if these diseases were "new" or "emerging," the reaction of the press would likely surpass that of what was seen with coverage of Ebola and SARS. This point was memorably illustrated by the executive director of the New Jersey Medical School's National Tuberculosis Center during his plenary session at the 1996 Conference on Global Lung Health:

> I am constantly concerned about that which gets the attention of those outside this room… If a statement was released today by the [International Union Against Tuberculosis and Lung Disease] announcing a new disease called "Phthisis" which was found to newly infect one person every second for a total of one-third of the world's population, which progressed in 8 million, of whom 3 million would die every year, there would be standing room only for the press, with video monitors outside to pick up the overflow. Look at the worldwide response to the recent Ebola virus outbreak which killed a total of 245 people, 12 thousand times *less* than TB kills each year! (Reichman, 1997, p. 3)

Most recently, the decrease in AIDS coverage in the media is a reflection of the elusiveness of finding a cure for the virus as well as Americans' fatigue with a topic that seems less important now than it once was.

The Scientific Agenda

In order to combat this issue and increase attention on infectious diseases, scientists, public health officials and others with a specific interest created a label to inject an air of urgency in the topic by identifying a group of diseases as "emerging infectious diseases" (EIDs). In his examination of disease and representation, Gilman

(1988) discusses how the perception of an ill patient is directly related to the contextual lens:

> It is not trivial to understand how such labels of disease are created and internalized, how the ill are (and have been) perceived. For it is the perception of the patient that structures the patient's treatment, the patient's status, the patient's self-understanding, as well as the patient's response to that complex interaction of social and biological forces that we call "disease." The infected individual is never value-neutral, that is solely a person exhibiting specific pathological signs or symptoms. Like any complex text, the signs of illness are read within the conventions of an interpretive community that comprehends them in the light of earlier, powerful readings of what are understood to be similar or parallel texts. (p. 6-7)

Conceiving a distinct category with an ominous label supplied the necessary frame of reference to signify special treatment and attention was warranted.

According to a pivotal report from the Institute of Medicine (IOM), "emerging diseases are clinically distinct conditions whose incidence in humans has increased" (Lederberg, Shope, & Oaks, 1992, p. 34). By definition, a disease can be considered as "emerging" if it is "new" – an illness caused by a pathogen that is truly novel or by one that is newly identifiable as a result of improved surveillance and/or diagnostic technology. A pathogen can also be labeled as "emerging" if there is an increase in the number of confirmed cases reported to the CDC. It is at this point that the EID term becomes fluid, as King (2001) explains:

> [T]here was little in the definition of "emerging diseases" that allowed one to distinguish it from the broader term "disease." The IOM did not specify geographical, temporal, quantitative, or population-based parameters that might qualify the term "increased." This "increase" was a free-floating signifier, abstracted entirely from specific places, time periods, or populations: it could signify one or one million extra cases of an illness; it could pertain to a global pandemic such as HIV/AIDS, or a highly localized outbreak such as Ebola or the West Nile Virus; it could refer to a categorical increase over a period of years, such as the resurgence of standard and drug-resistant tuberculosis in the 1980s and 90s, or to a brief, one-time outbreak of food-borne illness resulting from a contaminated batch of hamburger… The "increase" was thus quite clearly *perceptual*, wholly divorced from any *actual* changes of incidence or morbidity in the material world. (p. 46-47)

In effect, this definition allows enormous flexibility and essentially enables nearly any infectious disease to be identified as emerging. An infectious disease that is repackaged and categorized as an EID is newly minted as a novelty and can be grafted into the media spotlight as one that is worthy of public attention and additional funding. King describes how recoding a disease as an EID can make it more "valuable":

> [N]ovelty is most like money in its form and its function. Calling something "new" increases a thing's value by making it possible for disparate fields to see that thing as valuable… [T]he classification of a disease as "new" – no matter what its other characteristics – immediately results in an increase in its cultural value: reporters want to cover it (that is, repackage it for the media consumer); the

> culture industries want to capitalize on it (that is, repackage it for the entertainment consumer); researchers want to study it (that is, repackage it for the consumers of research – granting agencies, professional organizations, journals, etc.); and politicians want to address it (that is, repackage it for public consumption). (p. 83-84)

In a sense, stakeholders that wish to commodify an infectious disease can manufacture novelty in order to increase its cultural value and further their specific agendas. By reclassifying it as an EID, they can potentially increase the discourse concerning the disease and elevate its level of importance. Scientists in particular can "lay claim to having expertise, thus promoting their own status and justifying increased access to funding and public attention" (McGee, 2003, p. 93).

Since novel information and diseases are coveted by journalists in particular, institutions and individuals resort to the production of "pseudo-events" such as frequent press conferences and press releases (King, 2001). Singer and Endreny, in a 1993 study of news coverage of disease and other risks, determine that:

> Newly identified diseases… will elicit a flurry of attention that then subsides, to be replaced by subsequent flurries as the disease spreads to new populations or areas, or as contributing factors, causes, or cures are identified. Of course it is not only changes in the real world that drive these fluctuations but also the media's quest for "new." (p. 11)

In other words, the discourse that results from intense media coverage of EIDs propagates further discourse of infectious diseases and an accommodation – a reality shift – of what happens in our world.

It is important to note that scientists are an active part of this intentional reality shift. In response to a growing concern in the infectious disease research community, virologists organized a conference in May 1989 to address these concerns and begin a larger conversation regarding the potential risk of infectious diseases. In retrospect, this conference was a landmark in the development and deployment of the EID agenda on behalf of the scientific and public health arenas. Additionally, some claim that a portion of intense media coverage of Ebola and other EIDs was part of an orchestrated effort to launch a targeted media campaign to garner the attention of the press and the public in order to influence revisions in public policy (Freimuth, Linnan, & Potter, 2000; Howard, 2000).

Although many scientists and medical researchers desire media attention and coverage of their work, announcing new results to the mass media can be a professional challenge for scientists and medical researchers. Since publication of original research in peer-reviewed journals is often a professional goal for scientists, they must carefully abide by what is commonly referred to as the Ingelfinger Rule. This rule, originally instituted by Franz Ingelfinger, former editor of the New England Journal of Medicine, requires that manuscripts submitted to certain journals cannot have been previously published in any media, including mass media or the Internet. (As with any rule, there are exceptions – research findings can be presented at professional conferences and information can be released if it is associated with an urgent public health issue.) For the most part, scientific and medical journals enforce this rule of for two reasons: first, to subject the findings to an intense peer-review process in order to publish accurate information, and second, to maintain an originality of the content of the journal. The

problematic part is that the submission and peer review process can be lengthy, taking anywhere from a few months to a few years for the paper to be published. By the time the journal is in print, the information is outdated. Regardless, failure to conform to this rule is a professional risk for scientists since journals can revoke publication agreements and prohibit further manuscript submissions.

The Ingelfinger Rule affects journalists as well as researchers. Typically, the journal will release an advanced copy of each issue to the press one week prior to publication. Writers receiving the advanced copy can review the material to identify potential stories and interview the authors; however, they must agree to a one-week embargo on the story until the issue is publicly available. If a writer breaches the agreement by covering the story during the embargo period, she will lose her advanced copy privilege. Since science journalists are well-informed of the Ingelfinger Rule, many of them avoid pestering scientists and medical researchers about current research findings until they are published.

Writing about Science News

Once information is available to the public, science writers are dependent upon scientists to give them novel details about their work and the results. This can be somewhat problematic in a true journalistic sense, because the scientists maintain a great deal of control over what is given to the writer.

> Because of the powerful role scientists play as sources of science news, they can keep bad news out of the papers if they so choose. So the science that comes to the attention of journalists tends to be only the good news, which is not always the most newsworthy news. (Gregory & Miller, 1997, p. 113)

Not only is the scientist's control an issue, but also of issue is the dependence of the science writer upon the scientists to make sense out of the research in order for the writer to accurately explain the results. Dornan (1990) asserts that the dependency produces science coverage that is more deferential towards the scientists and to science than is normally acceptable in journalism.

However, the relationship between science writers and scientists is not merely about control. Scientists are willing and even eager to speak with journalists about their research, hoping for a press opportunity to increase publicity on their research and in turn increase potential funding. Additionally, being recognized and incorporated as an expert in the field by a journalist helps to solidify professional standing. For the journalist, using a respected scientist as a source for a story lends authenticity to the report and increases the likelihood of the story being aired in the evening's news segment or published in the newspaper or magazines. It is a symbiotic relationship, one that is rewarding to both parties and beneficial for future collaborations.

A symbiotic relationship also often exists between science writers. Often times, they collectively determine what is newsworthy (Dunwoody, 1986). This group effort may help them gain editorial approval, as McGee (2003) explains:

> Journalists do not have the final say over what stories get published: editors do. But if an editor perceives a story presented by a science writer to be the "hot story" that everyone is buzzing about, then that story is more likely to get published. By cooperating and agreeing with other writers about what news stories they will all focus on, science journalists increase their chance of getting

> stories published by collectively predetermining which stories are hot news items. (p. 119)

Hansen (1994) describes science writers as “collegial but competitive” as they share a common set of methods and principles and are a fairly small club (p. 111).

If scientists are considered the primary source of science news, science writers can be described as the first sieve in the filtering process of determining what will become newsworthy. Journalists writing about science issues tend to choose a story that will be easily sold to their editors as well as one that will likely run for more than one article. Although this is probably true for most journalists, the complex nature of some scientific reports makes this especially true for science writers, as Gregory and Miller (1997) illustrate:

> Journalists who work hard to understand the latest science and to establish contacts with the relevant scientists may only get one story out of their efforts, compared with the dozens that will appear during an election campaign. And science sometimes goes slowly: there may be a next step in a science story, but it might be a long way off; by the time that hard-won scientific knowledge is needed again, the journalist may either have forgotten it or have moved to another posting. (p. 112)

Perhaps it is best described as an issue of efficiency – the time invested by the journalist to grasp the scientific details in order to explain these details to her audience in understandable and engaging narrative must be balanced by the longevity of the storyline (and perhaps acclaim) as a return investment. Otherwise, the story may not be worth the trouble in telling.

The pieces that are chosen as newsworthy also greatly depend on how well the science included in the report can be translated into a captivating narrative. For example, much scientific research is conducted in teams, and many significant reports typically have around ten to twelve authors from several different institutions. However, reporters have found that it is necessary to focus on one or two authors in order to have adequate time to personalize the story in a way that the audience becomes interested in the scientist as well as the science. Singling out one author for an interview is potentially alienating for the chosen author, since as Gregory and Miller (1997) reveal, "journalists need to focus on just one or two people, which can create bad feeling [*sic*] among the ones who do not get into the limelight" (p. 114). This need to personalize the story with one or two scientists may dictate whether or not the story can be told in a way that is pleasing to both editors and the potential audience.

Compounding this problem is the intrinsic hierarchy in many research institutions, as the one or two people that are interviewed may not necessarily be the ones who conducted the research. Requests for interviews may be procedurally diverted to the head of the research department or an administrator instead of to the graduate student or research technician who did the actual work. In my personal experience as a research technician in a microbiology laboratory, this was often the case. I would conduct the research in the laboratory and summarize the findings, but I was rarely included as an author on the papers or presentations that reported the research results. Science writers may find themselves unable to speak with the one or two people who carried out the research, and therefore the story may lack the sense of excitement that often accompanies the moment of discovery.

Additionally, narratives about scientific discoveries can be impacted by the way a science writer chooses to tell the story. The problem occurs because of a fundamental difference between science and news narratives – science narratives are worded in such a way to provide for deductive application whereas news reports are worded to provide a foundation for inductive reasoning:

> Science is supposed to be generalized and generalizable – it deals with classes of things and repeatable events; but news is specific, so the words used must be specific, rather than general: "gun" rather than "weapon"; "pig" rather than "mammal." This makes the news story more concrete and easier to relate to and to visualize. It may also skew the emphasis of the original science story; and, by making it more accessible, it may provoke a more emotional response in the reader. (Gregory & Miller, 1997, p. 116)

This narrative gap between science and news can be misleading in other ways:

> To be concise, journalists may remove the qualifications in scientific language – "this is very good, but only under these conditions" becomes "this is very good." This has the effect of exaggerating – and exaggerations have greater epideictic appeal. It also makes information look more certain than the scientists might think it actually is.
>
> To be relevant and meaningful, news reports often emphasize the potential applications and outcomes of scientific results, rather than the process by which they were developed. Emphasizing applications again makes the information seem more certain – already the results have some use in the real world, so they must be right; and the results make sense to use, because we connect them with a

real-world problem – a problem which may provoke an emotional response. (p. 116)

By succumbing to the need for specificity in news reporting and by illustrating the potential usefulness of research findings, journalists may inadvertently skew the meaning of the results and mislead their audience. However, one can understand why these narrative devices are necessary in order to sell the story to the editor so that it has the opportunity to become news in the first place.

The use of narrative devices is even further employed if the news report is being prepared for a television audience. By nature, science does not lend itself to visual storytelling – much science cannot be easily witnessed. Physical changes, when observable, often happen very slowly and/or microscopically. At present, it is difficult if not impossible to watch some science as it occurs. To compensate, reporters and editors employ visual effects to make science visible, vibrant, and exciting: a growing plant is filmed with a time-lapse camera and the resulting film clip depicts growth at a vastly accelerated pace, color is used to demonstrate virility and/or danger, and animated sequences are created to visualize microscopic interactions. All of these devices can be misleading to the audience, leaving the impression that science occurs in the blink of an eye and with precision. The way a science writer chooses to illustrate the science narrative helps to frame the way the narrative is read and interpreted.

Selecting the Science Agenda

Regardless of the way the science writer chooses to tell the story, the story will only be told if the editor or producer considers it to be newsworthy and relevant. Glassner

(1999) questioned a veteran reporter at the *Los Angeles Times* about the large amount of coverage in her paper about the ValuJet crash in 1996:

> "There is an expression around the newsroom," she responded. "News is what happens to your editors."
>
> She did not mean, of course, that her editors had been on the ValuJet flight that went down. She meant that her editors – and their bosses, the executive editors and senior management at Times Mirror Corporation – fly a lot. So do their families, friends, and business associates. They are more likely than many people to know someone who has been in a plane crash or narrowly avoided one. They can imagine as well that unless greater attention is paid to airline safety, they will know victims in the future or could end up on a fatality list themselves. (p. 201-202)

Although Glassner reviews this situation in the context of current events, Gregory and Miller (1997) echo his discussion as a common occurrence for science writers. They emphasize that the stories that are selected for inclusion in the newspaper or the evening news are the ones that have the potential for drawing large audiences. Thus, what is newsworthy may be based more upon the capability to draw viewers and generate revenue and less upon significance or importance of the findings.

It is the drive for a large profit margin that not only affects what stories are told but also how they are told. Laurie Garrett (2001), a highly respected science journalist, proclaimed:

> Today the bastions of media information are publicly traded on the New York Stock Exchange and NASDAQ… We are now being commanded to turn profits

> in excess of 15% annually, in some cases more than 20%. It's almost impossible to do so without sacrificing absolutely everything that news is supposed to be about. (p. 89)

In his research, King (2001) found that the pressure to produce a succinct yet powerful piece that can be packaged to draw readers or viewers can negatively influence how the story is constructed:

> With advertising taking up as much as 70% of a newspaper's space, television air time for a news story limited to ninety seconds or less, and intense competition for consumers of Web-based information, journalists were under enormous pressure to produce content in an efficient and high-impact manner. They thus became heavily reliant on a few authoritative sources (especially "star" scientists who may have little or no expertise in the specific areas upon which they are asked to comment), and the products of public relations personnel – press releases, press conferences, and other "pseudo-events" designed to cloak scientific activity in a sense of novelty and urgency. (p. 74)

King continues his discussion of the altering nature of profit-based journalism, highlighting how the role of the journalist is somewhat mistaken:

> In contrast to the myth of the intrepid investigative reporter who sways audiences with the power of her story, journalists and editors in the mass media were well aware that their job is not to sell content to consumers, but rather to sell audiences to advertisers (p. 74)

The media corporations' need to generate revenue greatly impacts what is told and how it is told.

The limited amount of space in newspapers and news broadcasts on network television also affects what is included as news items. It is commonly accepted that the lead story on any given day is not only determined by the importance of the story itself but also by the importance of other news stories that are concurrently unfolding. This holds true for specific genres, including science reports. In his research, McGee (2003) quantified the number of news articles about infectious diseases during the 1990s. He found that although the amount of attention was extremely high in the mid- to late-1990s, with stories of Ebola, other EIDs, and biological warfare, news attention to infectious diseases began to decline in 1999. To explain the downward trend, he pointed towards an alternative "doomsday virus" story, one that increased in frequency with the approach of the new millennium – Y2K. McGee proposed that there is a finite amount of news coverage that is available for proclamations of potential disaster. "With a sizable but nevertheless finite 'impending doom quotient,' a dramatic increase in one hot doomsday agenda will likely displace others, though it may or may not displace other news items" (p. 162). Here again, what is considered as newsworthy science is an effect of the nature of the news industry and the context of what is happening at the same moment in time.

Other parameters of the news industry help determine what is accepted as news and which stories are most important. Some news media sources are deemed more significant than others, creating an inequality in the news media market. These principal news outlets, especially the *Washington Post*, the *New York Times*, the *Chicago Tribune*, and the *Los Angeles Times*, play a disproportionate role in establishing news priorities for the entire country. The power of these newspapers to classify news as legitimate is commonly referred to as "agenda setting." Agenda setters not only establish the news

priorities for other newspapers, but also, as Gans (1980) contends, determine legitimate news topics for television news networks. It is the nature of producing segments for television that make this understandable:

> Most newspaper editors and television producers rely heavily on the *New York Times* and *Washington Post*, the wire services, a few morning columnists, and more generally, the covers of *Time* and *Newsweek* for indicators of important news. The *Times* is preeminent, compared by one expert to Harvard in the educational field. Each night the newscasts contain late-breaking items that did not make the morning papers, but producers prepare the majority of their material well in advance of air time. That material is largely dictated by headlines from the prestige papers and the news budgets of the wire services. This makes good sense considering the complications of putting together an expensive newscast on nationwide television at the last moment. (Small, 1994, p. 16)

Similar to story selection by editors based on familiarity and potential profits from audiences and advertisers as well as story selection by journalists to construct an intriguing, sellable narrative, agenda setting by major newspapers and newsmagazines filters potential news stories to the point that very few science items are deemed newsworthy and presented to the general public. Therefore, what we the audience consume as news is highly filtered by an elite group of individuals. Plus, on any given day, a “less valuable” story could have been the lead story. As such, it is crucial to consider science news as a social construct dependent upon context, narrative qualities, and profit margins.

Media Proliferation

The ability to influence other media outlets is not solely a function of news media. Other mass media divisions can and do accomplish this at an efficient rate. In the case of infectious disease narratives, this can be easily illustrated by examining the vast proliferation of Ebola and other EID coverage partly resulting from a piece by the science journalist Richard Preston. Preston published "Crisis in the Hot Zone" in *The New Yorker* in 1992, an article about a horrifying viral hemorrhagic fever called Ebola that surfaced in a primate facility in Reston, Virginia. The article illuminated how tropical diseases that are not endemic to the United States could be a serious health threat to the American public and served as a catalyst that helped launch an American obsession with emerging infectious diseases. The public attention that resulted from the article also helped initiate a chain reaction of Ebola coverage in a multitude of mass media venues. Hollywood showed an immediate interest in acquiring the rights to the article in order to adapt it into a feature film. According to Preston, "within a day of publication, the *New Yorker* was deluged by phone calls" and "within two months of the publication of my piece, 20 unauthorized screenplays thudded onto the desks of producers all over Hollywood" (Fine, 1995, Feb 28, p. 4D). Preston parlayed the success of his *New Yorker* article into the publication of a full-length book. In 1994, *The Hot Zone* infected American culture as it became a national best-seller and solidified Preston's reputation as a premier science writer.

By this time, other writers and producers had joined the infectious disease discussion and developed competitive pieces of their own. Laurie Garrett's voluminous book *The Coming Plague: Newly Emerging Diseases in a World out of Balance* (1994)

was published the same year as Preston's book and became a national best seller. Before these two books hit the bookstores, filming began on two movies, one of which was an adaptation of Preston's book and starred Robert Redford and Jodie Foster. *Outbreak*, the second film starring Dustin Hoffman, Morgan Freeman, and Renee Russo, won the race to post-production and was released in 1995. However, *The Hot Zone*-based movie was scrapped not long after filming began. A few years later, Preston published *The Cobra Event* (1998), a fiction best-seller about biological weapons. A cascade of other infectious disease books appeared during these years, including *Biohazard: The Chilling True Story of the Largest Covert Biological Weapons Program in the World – Told from Inside by the Man Who Ran It*, a frightening account by Ken Alibek (1999), a former scientist in the Soviet biowarfare program. Presently, the trend is still holding thanks to media attention covering SARS, Amerithrax, and weapons of mass destruction. Preston again scored a best seller in his "dark biology" series with *The Demon in the Freezer* (2002), a nonfiction treatment of the development of smallpox into a bioweapon. Besides *Outbreak*, blockbuster films about killer viruses are also common: *12 Monkeys* (1995), *Mission: Impossible II* (2000), *Resident Evil* (2002), *28 Days Later…* (2002), and *Doom* (2005) are but a few. In 2003, the plot for the entire third season of the hit television show *24* centered on terrorists releasing a biological weapon in downtown Los Angeles. Not only do these books, television shows, and films build off of one another to claim a portion of the EID market, but they also shape the character of the discussion by focusing on the sensational portions of the stories in an effort to draw a larger audience.

Examining the explosion of Ebola narratives in the 1990s poses some interesting findings that point to the complexity of how information is selected as focal points in the

mass media. Although it is tempting to point to a single trigger to explain the massive attention towards Ebola and other popular science topics, doing so would be faulty since "a more careful examination of the timeline of media events, scientific reports, and microbial incidents in the world does not support a unidirectional model in which the media… single-handedly created Ebola or emerging infectious diseases as a major issue" (McGee, 2003, p. 251). I agree with King's (2001) conclusion that "the causal arrows connecting the mass media, the culture industries, and the public health community might in fact be considerably more tangled than a simple linear model would assume" (p. 134). The popularity of Preston's work along with Laurie Garrett's *The Coming Plague* drew the attention of the news media, and not vice versa.

Although other factors determine what is considered important science, such as cultural aspects of the science field, military agendas, and political maneuvering, public attention to science as a whole is often directed by mass media markets. In the following chapter, I turn from how infectious disease discourse is constructed in the media to how this discourse is a curriculum that can be read and interpreted by the public.

CHAPTER 4

INFECTIOUS CURRICULUM

In the previous chapter, I presented the various ways members of the mass media construct the science curriculum within popular culture. The next step in this analysis is just as crucial; this step is to consider the possible interpretations of the representations within the media. As I previously mentioned, I am not claiming an exclusive linear relationship exists between specific reactions to infectious diseases and what is found in books, television shows, movies, internet sites, and various other forms of media. This would be ill advised, especially since unique, personal experiences greatly contribute to an individual's interpretations of what he or she sees, reads, or hears. However, my goal in this chapter is to consider frequent interpretations of what is presented in the media. I will take this analysis one step further in the next chapter and discuss how these perceptions and the reactions to what is in the media can alter what we believe to be reality.

The concept that what appears in the media affects reality is not a new one, and is often referred to as the media-effects theory. The theory stipulates that extensive media or popular culture references can create fears as well as specific changes in behavior. In his book *The Culture of Fear: Why Americans Are Afraid of the Wrong Things*, Barry Glassner (1999) explains that the argument behind media-effects theory is that the myriad of images in the media, many of which are designed for sensationalism, at times contributes to the irrational fears of many Americans. Although he not convinced this is always the case, he does believe the theory "contains sizable kernels of truth" (p. xx).

According to Glassner, media portrayal of potential dangers can lead to shared fears among Americans that contribute to misleading conclusions and effects on reality.

> A plane wreck does not, in itself, cause canceled bookings or "vividly remind" people of anything. Both of these are effects of how the media cover a crash. It is reporters who implant images of "hurtling… in a pressurized metal can" and who, erroneously taking a string of accidents as indicative of bad safety management, draw dubious ties between the carnage of a crash and an airline's balance sheets. (p. 200-201)

In this example, Glassner illustrates how people's reactions towards what they perceive to be an unsafe mode of transportation – although statistically it is safer than driving in a car – has a direct effect on the profit margins of airline corporations. As we saw from the rise in samples submitted for anthrax testing to the Illinois Department of Health in 2001, increased media attention towards the potential danger caused an abundance of submissions (all of which were tested negative) but in doing so created a huge workload for the laboratory.

A more specific portion of the media-effects theory is what is often referred to as the CNN effect. "It is commonly argued that intervention during the humanitarian crises in northern Iraq (1991) and Somalia (1992) were partially driven by news media coverage of suffering people, the 'CNN effect'" (Robinson, 2002, p. 1). This theory purports that foreign policy decisions are partially driven by news media coverage. As Robinson points out, the two interventions in Iraq and Somalia in the 1990s were instigated by public outrage from watching people within these regions suffering on cable news channels. George Kennan reasons that the media's portrayal initiated an ill-advised

intervention and concluded the media had control of the foreign policy-making machine. Although the CNN effect relates directly to foreign policy-making issues within academic circles, the tenets of this theory can be applied to media coverage of infectious diseases. Media representations of contagious illnesses may not have an effect on policy decisions to date, but they certainly have brought about a public reaction that has shifted occurrences in the real world.

Infectious Signification

An important component to consider in the media-effects theory is the effect of imagery on viewers. Glassner (1999) illustrates how visual effects are more impressionable on viewers, explaining that, "print journalists only describe in words the actions of 'billions of bacteria' spreading 'like underground fires' throughout a person's body, TV newsmagazines made use of special effects to depict graphically how these 'merciless killers' do their damage" (p. xxii). Similarly, Sheryl Stolberg (1994, June 15), a medical writer for the *Los Angeles Times* in 1994, describes why sensationalist television news media take this approach: "Killer germs are perfect for prime time… They are invisible, uncontrollable, and, in the case of Group A strep, can invade the body in an unnervingly simple manner, through a cut or scrape" (p. 1). As Stolberg notes, the characteristics of infectious diseases in the media lend themselves to inciting fear and bringing about sensationalistic practices when describing a contagious germ. It is, in fact, the desired effect on the audience. It is important to note that since most of what is shown is depicted as a non-fictional account, although certainly parts of what is illustrated is fictional, the impact of viewing these images is greater than what it would normally be for something that was fictional.

The use of imagery in news media in particular has brought about an effect as to how these stories are read by the audience. Because of the potential impact of these images, public health officials seem to have less control over the audience's interpretation than they did prior to the rise in popularity of cable television. Garrett (2001) explains:

> [T]here was a time when public health leaders garnered a great deal more respect and were viewed in more heroic terms than today. Back in the 1960s and 1970s, many elements of the media acted like cheerleaders for public health, viewing the profession as one of great crusaders. If ever again we face a situation involving images like a child with smallpox, the public's response will not be driven by media commentary but by the photo or video itself. It's hard to imagine that there wouldn't be a panic response. (p. 90)

Garrett wrote these comments prior to the anthrax attacks, so it is apparent her prediction was accurate. The paranoia of the general American public when opening their mail was compounded with spikes in sales of duct tape and plastic sheeting, illustrating Garrett's point.

As I discussed in chapter two, it is the signification of images that makes them so powerful. Discourses through popular culture media often rely on images to construct their stories, and this creation of stories directly relates to the construction of the perceptions of fear. As McGee (2003) remarks in his research,

> The construction of risk of EID's in mass mediated discourses is not based on a statistical or epidemiological calculation of the probability an individual or group will be affected by these diseases. It is based on signification, and the use of

> images, words, and narratives to create and deploy meanings about the diseases. (p. 205)

Audiences draw meanings from the use of images, including words and graphics, as well as sounds, so it is crucial to study these images at length for what they potentially represent and how they are employed throughout popular culture.

Several images in today's culture reference biological dangers and are easily recognizable. Because of the exposure in the past several decades to biological warfare and natural biological dangers, the biohazard sign – a flower-like symbol consisting of three interlocking circles – is particularly recognizable. "The ubiquitous biosafety hazard sign… has replaced the fallout shelter sign of mid twentieth century as the signifier of humanity's annihilation for the new millennium" (McGee, p. 206). Those familiar with the biohazard flower instantly know that the immediate area is potentially dangerous to personal health and must be avoided.

Since the realization that AIDS is caused by infected blood and other fluids, the danger of blood has become increasingly marked in people's mind along with other potentially lethal body fluids such as semen and saliva.

> [P]hysical signs themselves, such as vomiting or bleeding, could just as easily indicate a non-infectious condition, such as the effects of a roller coaster ride or accidental trauma. However, much like the media images of "Third World AIDS" discussed above, these images have been habitually repeated, circulated, and canonized as standardized fixtures in the representation of EID's. (McGee, 2003, p. 217)

People are highly cognizant of others' bodily fluids that threaten to cross their personal boundaries and often threat these fluids as extremely hazardous, regardless of the circumstances surrounding the appearance of offensive fluids.

Accompanying the biohazard flower as signs of biological dangers are the suits that protect researchers as they venture into biologically hazardous conditions. The biohazard suits, similar to spacesuits, completely enclose the scientist in a plastic sheath, protecting her from potential danger in the external environment. The plastic spacesuit creates a visible margin between self and nonself and graphically depicts danger. In his research, McGee (2003) notes the prominence of these suits in popular culture and declares that "if danger is portrayed by wrapping people in blue plastic, excitement is generated by poking holes in these containers" (p. 221). When a scientist in a movie accidentally tears her biohazard suit, the scene always includes a close-up shot of the look of panic on her face accompanied by swelling music to depict rising fear.

Although the escalation of heart-pumping music does not solely correlate to biological danger, it is important to note that music helps set the tone of what is presented and can therefore be considered a signifier. Music is a common tool employed in shaping a story for television to project the desired emotion upon the audience. In discussing the application of music and other devices such as camera angles to craft a story, Kitty (2005) explains:

> What should become clear is that reporters use many tools that do not directly relate in any way to the facts of the story. For example, what informational value does using morose-sounding violins as background music have?… These parlor tricks are used to spice up stories, but they also have a more questionable purpose:

> they are ways to bolster a factually weak story with window dressing. These tricks can also be used to manipulate the audience's emotions…
>
> Still, most news packaging is not done in a deliberate attempt to fool the public. Most news producers do honestly believe the information they are reporting is fair, balanced, truthful and accurate (and many times, it is). But information can be manipulated – music directs the audience to feel a certain way, even an extreme close up of a newsmaker can make a normally honest person look shifty and dishonest. (p. 42-43)

The way a story is told greatly impacts the way the story is received by the audience. Common devices such as imagery, music, and camera angles are as crucial as the narrative itself. This use of music as a tool is often employed in movies and television shows to depict danger and certainly this is not an exception for clips of biological hazards.

Effects of Mass Media on the Perception of Infectious Diseases

The various forms of mass media help shape our perceptions of the world through language and imagery. By molding our view of reality, mass media also contribute to shaping our reaction to reality. When we perceive the world differently than we previously viewed it, any new information that we discover will be built upon an altered foundation. Similar to the concept of a paradox in the time-space continuum, a miniscule change can profoundly transform a trajectory over a period of time. McGee (2003) discusses this at length in his work and concludes:

> mass media, including the news, do not simply reflect reality, but instead shape our perception of the world through the deployment of language and imagery. The

> signification of emerging infectious diseases, like that of AIDS, occurs primarily through the assignment of standardization of definitions and images arrived at in a mass-mediated dialogue between science and popular culture. The meanings created in this process serve as templates that frame other, similar issues. Just as the AIDS epidemic provided a blueprint for the representation of other emerging infectious diseases such as Ebola virus, hantavirus, and "Mad Cow disease," representations of these newer infectious disease threats heavily inform our understandings of germ warfare threats. (p. 312-313)

Media coverage of the anthrax attacks reflected what was occurring in reality but in effect also shaped reality whenever reaction towards what was being repetitively shown in the news media caused an overrun of samples at the Illinois Department of Health and other health departments across the country. Although this turned out to be little more than a minor annoyance in the form of an increased workload, it could have been highly detrimental to our efforts if laboratories were forced to test hundreds of thousands of negative samples while trying to combat an attack if it happened on a larger scale.

This occurs relatively frequently, not only with biological concerns, but also with widespread fears that are exacerbated by what is shown in the media. "Watch enough brutality on TV," Glassner (1999) states, "and you come to believe you are living in a cruel and gloomy world in which you feel vulnerable and insecure." In his research, George Gerbner (1992) illustrates how excessive violence on television manifests itself in what he refers to as "mean-world syndrome." He concluded that people who regularly watch a lot of television are more likely to consider their neighborhoods to be dangerous. They also tend to believe they are more likely to be the victim of a crime than statistics

predict and buy more locks, security alarms, and guns than other people in order to protect themselves. Glassner concurs with Gerbner's view and offers real world evidence to support his conclusion, discussing how the elderly are afraid to come out of their homes:

> In the worst cases they actually suffer malnutrition as a consequence of media-induced fear of crime. Afraid to go out and buy groceries, they literally waste away in their homes. The pattern becomes self-perpetuating; the more time elderly people spend at home, the more TV they tend to watch, and the more fearful they grow.(Glassner, 1999, p. 45)

McCarthy (1998) agrees, explaining that many people who use popular media to judge personal risk from crime believe that cities are extremely violent. Greg Dimitriadis (2003) interviewed several urban, African-American teenage boys and found that they believe this to be true. Rufus, one of the boys Dimitriadis befriended and included in his book, told him "It seems like they scared of us teenagers nowadays… all they go by is the media and the press, that's all they going by" (p. 62).

The effects of fear-inducing themes in the mass media influence not only individuals but also society as a whole. Glassner (1999) continues his argument by explaining that "scare campaigns can become self-fulfilling, producing precisely the negative outcomes that the doomsayers warn about" (p. 94). He discusses the common stigmas associated with children of unwed mothers and how these connected perceptions of the children can occasionally cause adults to treat them differently. For example, according to Glassner, children from one-parent families tend to end up in jail more often than children from two-parent families because they are more likely to be arrested than

children in two-parent households that commit similar crimes. In the same way, he contends that children from single-parent families do not perform as successfully in school as children from two-parent homes because teachers in the classroom treat them differently than the other children. Although the situations he describes are almost certainly more complex than a singular cause and effect scenario, it is reasonable to conclude that perceptions of a person may cause that person to be treated differently. This argument is grounded in the issue of representation since everything we view is through a cultured lens, including our perception of others and how we respond to others.

Massive media attention can have a detrimental effect on how infectious diseases are perceived by the general public. After the 1995 Kikwit Ebola outbreak and the enormous amount of media coverage that was associated with it, mass media outlets – news operations in particular – set a precedent for attention to emerging infectious diseases. In what Susan Moeller (1999) referred to as the "Ebola standard," any disease would need to reach a new height in contagiousness, lethality, and graphically horrifying symptoms in order to garner a modicum of attention in the press, the mass media, and the public. The new standard for newsworthy infectiousness can have potentially dangerous consequences to society. McGee (2003) notes that an overabundance of warnings of EIDs and biological warfare threats

> may actually be misleading, and may result in a misplacement of public health and medical priorities. It must be noted that the high level of attention given to new exotic and horrific diseases obscures the fact that, with the exception of AIDS, they are not the major causes of death in the world today. (p. 24)

While focusing on the wrong biological threats, we lose sight of the true dangers to public health. This is yet another way of how media attention shifts perception and shapes reality.

An outbreak of fear can be triggered by the mass media as was seen in the 1995 outbreak of the Ebola virus in Kikwit, Zaire. The extensive media coverage that resulted from the eruption stimulated a chain reaction of frenzy and hysteria that rivaled any previous event in infectious disease in postmodern society. Science correspondent Leslie Papp (2001, February 10) identified Richard Preston's 1992 article in *The New Yorker* as "article zero" for this outbreak of fear. She explains:

> The Ebola virus still sends shivers through North Americans – thanks to Hollywood. Pop culture, rather than lab cultures, is at the root of an Ebola scare that rippled across the continent this week from the unlikely epicenter of Henderson General Hospital in Hamilton… Ebola is different, not because it's more dangerous than other viruses. It's the one that's gone Hollywood… The virus has been the subject of scores of sensational articles, books, and, above all, movies. Filtered through Hollywood's carnival lens, it looks disturbingly apocalyptic – a mass killer – as easy to catch as the common cold and capable of rapidly spreading across the continent. Once caught, Hollywood Ebola is invariably fatal, dissolving a victim's organs into gumbo as doctors helplessly watch. (p. NE03)

As Papp points out, the movies and television specials that featured Ebola or Ebola-like illnesses often contained an inaccurate portrayal of the contagiousness of Ebola. Known Ebola viruses are spread through direct contact with an infected person, animal, or bodily

fluids rather than through coughing and sneezing like the common cold or influenza. It is more difficult by comparison to contract Ebola. However, Hollywood Ebola can easily be transmitted across a room, similar to the scene in the film *Outbreak*: a theater full of unsuspecting people are in imminent danger as an ill attendee coughs infectious respiratory droplets in the air which float towards and are inhaled by its future hosts. It is Hollywood Ebola that contributes to the hysteria towards infectious diseases and worsens the misplacement of infectious disease priorities.

One of the ways in which media shapes reality is what is often referred to as the priming effect. With infectious diseases in particular, the priming effect theorizes that massive exposure to media coverage of contagions serve as a foundation for future perceptions of infections. Perhaps the most significant priming event for infectious diseases in the twenty-first century was coverage of AIDS, for "many of the narratives and images that are now frequently used to represent a variety of emerging infectious diseases were established during the first ten years of AIDS coverage" (McGee, 2003, p. 19). Of course, as was mentioned previously, AIDS did not receive significant attention until a celebrity face was associated with the illness. Paula Treichler (1999) denotes the involvement of a celebrity whom the public had known and loved for years as the trigger that changed the nature of the media coverage and the public's reception of AIDS.

A result of the intense media focus was the creation of an unsavory public appetite for infectious disease as spectacle. This priming effect undoubtedly contributed to the Ebola phenomenon in 1995. The hysteria that accompanied AIDS coverage and the public realization of the significant health threat posed by AIDS was relived as Ebola was depicted as a threat to people living in the continental United States. This continues today

as one episode of an infectious disease in the news primes for the next, with AIDS priming for Ebola, Ebola priming for West Nile, West Nile priming for SARS, and so on. At present, all of these past events have cumulatively primed for the current state of anxiety associated with the threat of pandemic influenza.

It is also this intense media coverage of contagions such as Ebola, anthrax, West Nile virus, and presently the avian flu that can lead to what Susan Moeller (1999) refers to as compassion fatigue. Moeller maintains it is easy for Americans to become disinterested in a topic that is constantly featured in the media for an extended period of time because they are not capable of sustaining interest in the topic. "It's the media that are at fault. How they typically cover crises helps us to feel overstimulated and bored all at once" (p. 9). Moeller explains how the nature of postmodern journalism, characterized by too much coverage, too many disasters, similar treatments of the topics, and sensationalistic coverage in the media among other things, is the cause of compassion fatigue. Additionally, she emphasizes the blending of news with entertainment is highly problematic and creates a sensationalistic spectacle. Moeller's concept of compassion fatigue can be observed in recent events, with the reporting of September 11th being the most noteworthy example. The devastating emotions in the wake of the terrorist attacks were compounded by an unprecedented media focus on the aftermath to the point that many Americans were left feeling numb. After two solid weeks of nearly every television station dedicated to coverage of unfolding news and reflections, many people simply felt sedated.

Because of anticipated news reporting, a massive amount of media coverage tends to be one of the goals in planning terrorist attacks. Yet again we see affects of the media

as plans are made that bring about changes in our reality. Martin Esslin (1981) illustrates the (unintentional) relationship between television and terrorists:

> In the end the terrorists might be said to be actually working for television by providing the thrills and violence that enable news shows to compete with fictional thrillers and an endless stream of often sadomasochistic drama… Here, then, the nature of television as an entertainment medium, a purveyor of daydreams that transmutes reality into a kind of fictional drama, actually dictates the development of events in the real world… in our world today the deliberate creation of sensational events has become a major factor in the shaping of developments in the real world. (p. 64-65)

The anticipated reaction of the news media can be an essential planning component of a terrorist attack and consequently what happens in our world. Dialogue, even predictable dialogue, shapes our reality.

Conversely, news media broadcasts drive perceptions of military excursions and are a crucial consideration in military entanglements. Although the nuances of the tentative relationship between the military and journalists in the field are beyond the scope of this dissertation, the potential effects from this relationship do apply to this discussion. The Marine Corps:

> sees dealing with the media to be an important part of 'consequence management,' because the public perception of the outcome is believed to be extremely important. As Lt. Col. Arthur J. Corbett, Commanding officer of CBIRF put it at the Jane's conference in November, 1997, 'We lose or win on CNN.'" (McGee, 2003, p. 308)

As Lt. Col. Corbett alluded to in his remarks, it can be argued that the perceived outcome of a war is due in part to the portrayal of the war in news reports. Similarly, the war against germs is a crafted narrative in popular media, and the perceptible result of this war depends upon how the story is told.

Not only does the coverage of infectious diseases in the mass media have an impact on the general American public, but it also has an impact on specific Americans, including our political leaders. According to Richard Preston, J. Craig Venter, an American pioneer in genomic research, first convinced President Bill Clinton of the danger of weaponized smallpox during a dinner conversation in 1997 (J. Miller et al., 2001). In the course of the conversation, Venter recommended Preston's *The Cobra Event* to the President, Richard Preston's new novel about a mad scientist who creates a biological weapon from smallpox and unleashes it in New York City. This particular conversation and the reading of Preston's book impacted President Clinton to where he "became obsessed with biological weapons, mentioning the danger of weapons of mass destruction in nearly every speech" (McGee, 2003, p. 272). On his website, Richard Preston remarks:

> A copy of *The Cobra Event* ended up in President Bill Clinton's hands, and it reportedly scared the daylights out of him. He called a national security meeting to discuss the book, and the White House eventually authorized billions of dollars in funds to beef up preparedness for bioterrorism, should it ever occur. *The Cobra Event* also upset various government intelligence officials. At the time, many people in the U.S. government felt that there should not be any public discussion of bioterrorism. (Writing Career section, para. 3)

According to King (2001), the impact of Preston's work upon the President and his political agenda did not go unnoticed:

> A number of skeptics noted, with some dismay, that President Clinton's interest in bioterrorism was due in no small part to his reading of *The Cobra Event*, which he passed on to intelligence analysts, Defense Secretary William Cohen, and House Speaker Newt Gingrich. In a 1999 special issue of *Emerging Infectious Diseases*, Secretary of Health and Human Services Donna E. Shalala began her article 'Bioterrorism: How Prepared Are We?' by outlining the ploy of Preston's novel. (p. 209)

Not long after President Clinton read Preston's book, he had a conversation with Joshua Lederberg, a Nobel Prize winning geneticist and microbiologist with an extensive background in emerging infectious diseases, during which Lederberg pressed upon the President the urgency to prepare for a bioterrorist event. During the meeting, Lederberg gave President Clinton a copy of the August 1997 special edition of the *Journal of the American Medical Association*, an issue edited by Lederberg that was entirely focused on the theme of biological warfare (J. Miller et al., 2001). Both Richard Preston and Joshua Lederberg were able to successfully place bioterrorism on the White House agenda by situating themselves with President Clinton. President Clinton did turn his attention to the threat of biological weapons, perhaps partly due to Preston and Lederberg's influence.

Fact versus Fiction

Another factor that serves as cause for confusion is the blurring of fact with fiction within popular culture discourse. John Schwartz (1995, May 22-28), a reporter for the *Washington Post*, dubbed this phenomenon as the "Cuisinart effect," claiming the

pieces of fact and fiction are blended together in a way that they become indistinct from one another.

> The national obsession with Ebola and the potential for similar diseases to appear has led to a sort of Cuisinart effect. Ideas and images from sensationalistic films such as the televised “Robin Cook’s Virus” are blended with information from more authoritative works such as Laurie Garrett’s “The Coming Plague.” ABC’s “Nightline” and other news programs even used scenes from the fictional movie “Outbreak” to sharpen reports on the Zairian Ebola Outbreak... (p. A3)

Schwartz is alarmed at this practice and concerned about the amount of misinformation that potentially reaches the public as a result of the interpretation of the news stories and documentary-style programming. The cause for concern is justified when considering how many people may overestimate their risk of infection.

The Cuisinart effect can employ subtle blending of fiction with fact in addition to the more obvious techniques like those found in Schwartz’s examples. Malcolm Gladwell (1995, July 17) reveals how Richard Preston applied a similar technique in his best-selling book *The Hot Zone* as the pace, descriptions, plotline, and use of dialogue mimics the tone of a science-fiction thriller. Arguably, Preston’s approach to writing the book helped to make it extraordinarily successful in the commercial market, but it creates a vague boundary between a scientific account of actual events and literary devices typically used in works of fiction.

Richard Preston’s (1998) *The Cobra Event*, his next release after *The Hot Zone*, is what Preston himself describes as a “fact-based novel.” In another occurrence of the Cuisinart effect, Preston depicts his book as a work of fiction based in reality.

> The characters and story developed here are fictional, not based on any real persons or contemporary events, but the historical background is real, the government structures are real, and the science is real or based on what is possible… I pursued the subject of biological weapons with the same reporting methods I've used for my previous books, which were nonfiction. The nonfiction roots of this book run deep. (p. xi-xii)

Because the line between fact and fiction is blurred in *The Cobra Event*, it is difficult for readers to distinguish between what is fact and what is fiction. This makes is possible for readers to generalize the wrong information as being factual and can result in a misrepresentation of the risk associated with infectious diseases.

The trend to blend fact with fiction continued into the millennium with renewed vigor in the wake of the anthrax attacks and the blanketing paranoia of enemies of the United States resorting to the use of biological weapons. In 2005, FX network capitalized on this sense of fear by broadcasting *Smallpox* – a fictional, made for television movie depicting the intentional release of smallpox in New York City that traveled via mass transportation around the globe to kill sixty million people. The film is a "mockumentary" as it imitates the style of a documentary complete with genre-specific narrative devices: the retelling of past events, narrative voice-over, clips from fake news broadcasts, genuine footage of people suffering from smallpox, and interviews with victims, medical personnel, and scientists. It especially veers into the Cuisinart effect category by employing the mockumentary style, using factual information about smallpox, and seamlessly integrating interviews with real scientists between interviews with actors in character as scientists. Among the distinguished scientists are two highly

respected authorities in the field of biological warfare: Dr. D.A. Henderson, Distinguished Scholar of the Center for Biosecurity of the University of Pittsburgh Medical Center, Dean Emeritus of the Johns Hopkins School of Public Health, and Director of the World Health Organization's global smallpox eradication campaign from 1966-1977; and Dr. Ken Alibek, former Deputy Chief of Biopreparat, the biological weapons program in the former Soviet Union. By seamlessly editing together the fictional plot with comments from real experts, the movie blurs the line between fiction and fact; information is intertwined and truth is difficult to distinguish from fantasy. Unless the viewer is familiar with smallpox, biological warfare, and the actual scientists who appear in the program (although they are identified as non-actors in the end credits), he will be challenged to identify where the line exists.

The blending of fact and fiction has a curious effect. The types of mass media that tend to be viewed as fiction, including television shows, movies and novels, have been transformed into reliable sources along with news reports, newspapers, reputable magazines, and peer reviewed journals. McGee (2003) examines how this occurred in the time following the 1995 Ebola outbreak:

> [N]ews coverage was intertwined with and mutually reinforced by both popular media coverage in the form of best-selling books, movies, and magazine articles, and by scientific coverage in the form of conferences, journal articles, and major health policy works. Scientific, news media and entertainment media discourses about emerging infectious diseases did not follow a unilinear, unicausal trajectory in which one medium dictated and the others followed. Rather, these different

> sources constantly engaged one another in a mass-mediated dialogue, which represented an array of competing interests. (p. 315)

McGee's notion of mass-mediated dialogue is indicative of how discourse can shape reality since one thread of conversation can influence many others. In the case of emerging infectious diseases in particular, starting in the mid-1990s it became increasing apparent that books were influencing the news media more often than vice versa. Typically one medium dominates as source information and dictates what is covered in the other forms of media, but in this case the popular books such as *The Hot Zone*, *The Cobra Event* and Laurie Garrett's *The Coming Plague* drew attention to the subject of emerging infectious diseases rather than the news media. As witnessed with the massive Ebola coverage, the news media used Richard Preston's success with *The Hot Zone* as a catalyst to generate an impressive amount of media attention towards infectious diseases. This relates directly back to the Cuisinart effect, because as McGee points out, many of the books causing this phenomenon test the boundaries of fictional writing, such as *The Hot Zone* and *The Cobra Event*. Since Preston's books obscure the lines between fact and fiction, this trend becomes a concern for public health and medical officials as they consider what is being generalized by the American public regarding the perception of the risk of contracting a rare infectious disease.

In a telling representation of the Cuisinart effect, it is interesting to note that science journalists can sometimes be mischaracterized by news media as experts on the subject. This is what happened with Richard Preston as his success as an author of several popular books in the field of "dark biology" lead to his recognition as an expert on Ebola, biological weapons, and smallpox. After his highly successful 1992 article in *The New*

Yorker about a strain of Ebola in Virginia, Preston embarked upon a long association with emerging infectious disease topics that catapulted him to the level of an expert in the eyes of the American public. Prior to his release of *The Hot Zone*, he was interviewed on a popular newsmagazine show about the subject of his upcoming book. The majority of the show focused on "hot" viruses – ones that are highly contagious, particularly lethal, and typically rare. Preston's interview was the last segment in a series of interviews, most of which were conducted with scientists who actually work in biosafety level four laboratories, often referred to as the "hot zone." Even though Preston has no scientific training in his background, he is "all over the news, giving interviews on National Public Radio and elsewhere, and joining such established scientists such as Karl Johnson, Richard Krause, Joshua Lederberg, Stephen Morse, and CJ Peters as a major official news source on EID's" (McGee, 2003, p. 132-133). Additionally, in April 1998, Preston was invited to testify at a Senate hearing regarding the bioterrorist threat to America. Preston's work with fuzzy fiction resulted in the general perception of him as an expert in the field, and he is considered by many journalists to be an official news source regarding emerging infectious diseases. Granted, Preston has a way of describing the effects of these diseases so that the audience not only understands the description but also is enthralled and engrossed by it. However, to view him as a comparable news source to established scientists in the field is somewhat suspect.

Although Preston does not recognize himself as comparable with scientific experts in emerging infectious diseases, he does present himself as someone who is able to successfully communicate the risk of infectious diseases in easily understandable language to the American public. After *The Cobra Event* was released, he continued to

engage in the lecture circuit and discuss infectious diseases and potential biological weapons. During his visit to Georgia Southern University, Preston “discussed the dangerous possibilities that we face if a deadly infectious disease was weaponized to infect a national population” (Huff, 1998, September 29, para. 2). He sensationalized the American risk of being intentionally exposed to biological weapons by demonstrating onstage the ease with which a powder containing infectious material could be ejected and aerosolized, waiting to be inhaled by an unsuspecting passerby. He also revealed how the device he carried with him on the tour was rarely questioned when his carry-on luggage was inspected at airport security. Although his conclusions may not be faulty, as evidenced several years later with the anthrax attack, it must be noted that his success with speaking engagements involve personal financial gain, and his sensationalistic approaches are devices to deliver a successful lecture to the public and to sell more books.

Perception of Risk

The public perception of emerging infectious diseases has not always been so severe and filled with a sense of panic. Although the world previously feared infectious diseases, specifically during bouts of the plague and the pandemic flu, the American public as a whole gained confidence in modern medicine’s ability to defeat disease with the discovery of antibiotics in the mid-twentieth century. The use and success of antibiotics lead to a view of the infallibility of public health, particularly towards infectious diseases, but this perception is faulty. Nancy Tomes (1998) remarked how “Americans quickly came to believe that with a few soon-to-be-cured exceptions, modern medicine and public health had ‘conquered’ epidemic disease” (p. 254). The

identification of AIDS in the 1980s effectively shook American confidence in medicine. Once again, people were terrified of contracting a lethal disease, particularly one that had immense social consequences. The subsequent recognition that one's affluence did little to prevent contracting the virus also contributed to the fear that instilled itself in the face of this insidious epidemic. Fear again flooded the nation.

It is important to note that fear is greatest in the face of the unknown. As John Barry (2004) concludes in his research of the events surrounding the pandemic flu, the fear of the disease has a greater impact on society than the disease itself. Nicholas King (2001) reaches a similar assumption in his research of risk associated with infectious diseases:

> Risks are, in a most fundamental sense, "constructed." This does not mean that they are not real: certainly, one can not deny the very real material suffering and death that people the world over undergo as the result of their exposure to infectious diseases. Nevertheless, the risk of infectious disease is different from infectious diseases themselves. Risks are particular representations of phenomena, created by specific actors and packaged for consumption in order to attract attention and inspire material exchanges. The emerging disease campaign entailed the construction and deployment of infectious disease as risk, for particular individual, disciplinary and institutional ends. (p. 30)

King's point is an important one for it allows us to question the motive behind packaging infectious diseases as high risk. As I noted earlier, construction of risk can sometimes be associated with particular agendas including but not limited to public health priorities, funding priorities, publishing rights, and profit margins of corporations.

An Ebola *Outbreak* in the United States

In 1995, several threads of contagious discourse intertwined to produce a high level of anxiety about emerging infectious diseases. Most notably, the ongoing conversation about AIDS intersected with the popularity of Richard Preston's work, and Hollywood took notice of the rising interest in EID as spectacle. The film *Outbreak*, released in 1995, was inspired in part by Preston's article in *The New Yorker* and explores the possibility of an outbreak in the United States of a highly virulent and infectious virus similar to Ebola. Since this popular film was released during a time when American people's fear in rare tropical viruses was rapidly escalating, it is useful to analyze some of the potential interpretations and to consider how the film helped increase the level of anxiety about contagious diseases within sociological context.

Within the film there are numerous potential messages and images that may contribute to our knowledge about contagion and the possible consequences of military and scientific actions. As Colonel Sam Daniels (played by Dustin Hoffman), an epidemiologist at USAMRIID, investigates an outbreak of a mysterious, lethal illness in a village in the Motaba River Valley in Zaire, he questions the local doctor about the first case of the virus, patient zero. The doctor explains that the patient was a young man that was working with the white man to build a road into Kinshasa. When the young man returned to the village, he was gravely ill, but he drank from the village well and spread the disease to the others. The village JuJu Man, the doctor further elaborates, "believes that the gods were awoken from their sleep by the man cutting down the trees, where no man should be. And the gods got angry. This is their punishment." The film draws attention to the current conscious of environmentalists, highlighting the potential dangers

of a careless environmental policy. The road to Kinshasa, although beneficial to the villagers for transportation of medical supplies, food, and similar necessities, is mainly a commercial venture that will provide inroads for deforestation and commercial exploitation of natural resources in the name of profit. The director provides images in succession of a disappearing rain forest and utter viral devastation in the small African village.

Commercialism is not the only concept treated in a negative light. The secretive nature of the military is a message that is woven throughout the plot. At the beginning of the story, the Motaba River Valley villagers and a handful of American soldiers are suffering at the hands of the strange virus in 1967. Two men in what appear to be spacesuits tour the village hospital, speaking with the ill and wounded along the way. The local doctor explains the appearance of a mysterious illness in the village, one that has left many dead. The two suited Americans draw blood from some of the ill patients, promise the local doctor an immediate air drop of medical supplies, and quickly board an army helicopter. Moments later, the soldiers and villagers cheer as an army airplane releases a barrel that drifts towards the village below. As the package lands, the bomb that is inside the barrel detonates and entirely annihilates the village. When the Motaba virus resurfaces nearly 30 years later, we learn the two army men, General Billy Ford (played by Morgan Freeman) and General Donald McClintock (played by Donald Sutherland), intentionally destroyed the village to exploit the dangerous virus and develop it into a biological weapon. Imperatively, the existence of the virus must be kept secret to retain the advantage over American enemies or else they would be able to either

develop it into a weapon themselves or prepare a vaccine or an antiserum as a defensive measure against an American attack.

When the Motaba virus reemerges, the two generals do not reveal the previous discovery of and subsequent antiserum to the virus until a full-blown epidemic emerges in a picturesque California town. As the epidemic progresses, the military, along with the government, withhold information about the epidemic from the public in order to lessen the chance of creating a panic. When it is thought that the epidemic will not be able to be stopped with medical measures and the epidemic is predicted to spread across the United States within 48 hours, the President authorizes Operation Clean Sweep, a containment plan to drop a bomb on the town of Cedar Creek, obliterating every living thing, including the townspeople and the virus along with them. Later, Sam finds the monkey and uses her natural immunity against the Cedar Creek Motaba to synthesize an antiserum. In true Hollywood fashion, the gravely ill patients quickly improve – a cure is found. Sam informs the ethically challenged General McClintock that he can call off the bomber since the drastic containment plan is no longer necessary. McClintock refuses to rescind the order. Sam's emphatically pleas to the bomber pilots:

> ... don't drop the bomb just because you're following orders! What you haven't been told is that right below you in Cedar Creek there's a biological weapon that they've been manufacturing illegally for the past 30 years. I guarantee you that the disease has spread beyond the perimeters of this town! If you incinerate Cedar Creek, you incinerate the serum!

The incorporation of secretly developing the virus into a biological weapon echoes the post-Gulf War disclosure of Saddam Hussein's chemical and biological weapon arsenal

and the participation of the United States military (at USAMRIID) of biological weapon research.

Other suggestive images about the role of the military are encountered as military containment measures are depicted in the film. Once it is determined the town of Cedar Creek is infected with the deadly Motaba virus, troops invade in a convoy of army trucks, hummers, and helicopters to surround and contain the town of 2,618 people. Not only does the infiltration of the virus create a biological war zone, but it also establishes a scene reminiscent of a traditional war zone in the form of a military-state. The borders of the town are demarcated, complete with barbed wire and machine guns, imprisoning the people of Cedar Creek. All 2,618 people must be accounted for much like a prison roll call before lights out. They are informed that anyone attempting to leave town will be arrested on the spot, and a military curfew is enacted at dusk, confining everyone to their homes. Naturally, the people of Cedar Creek panic about the mysterious illness sweeping through the town and demand answers as to why soldiers and medical personnel have taken over the town dressed in head-to-toe protective gear, especially when an elitist hierarchy is evident as the townspeople are not provided any protective equipment at all. A distraught, angry mob forms outside of the hospital, and people shout at Sam, Robby (Sam's ex-wife and CDC epidemiologist) and the soldiers as they exit the building, pleading for information and answers to their questions. In a desperate attempt to evade the military patrol and escape the virus, two trucks maneuver away from the center of town and quickly cut across a grassy field towards freedom. A military helicopter threateningly flies into their line of site trying to halt them in their path. The three men in the first truck do not believe the pilots will do anything to harm them and do not relent.

The pilots fire warning shots ahead of the truck to demonstrate the extreme action they will take in order to impede them from escaping. One of the men in the truck aims a shotgun at the helicopter and begins firing. The pilots return fire, killing all three men in the truck, which then explodes. Terrified at what they have just witnessed, the second truck, containing a couple and their two children, stops and they raise their hands in the air as several soldiers point their machine guns inside the vehicle.

Several major events involving swarms of police and/or the military (or National Guard) and the accompanying image saturation in the news media occurred during the four years prior to the release of the movie. The Los Angeles riots in 1992, the bombing of the World Trade Center in 1993, Waco in 1993, and the bombing of the Murrah Federal Building in Oklahoma City in April 1995 all transpired during this time frame. Although the military invasion of Cedar Creek in the movie does not draw from an actual historical event in the United States, these actual events in recent U.S. history provide a framework to the recognition that a military occupation on American soil is not outside the realm of possibility and may in fact be likely. The combination of this likelihood with the possibility of an outbreak of a lethal virus provides glimpses of a future that is realistically depicted in the film.

As is expected in a film called *Outbreak,* images of contagion proliferate throughout the movie. The film pointedly portrays the dangerousness of some infectious agents in several different scenes. As the credits appear in the beginning of the story, we are taken on a tour of the laboratory facilities at USAMRIID and experience the different hazard levels of germs. We visit a relaxed lab that is designated BL-1 for Biosafety Level One; titles at the bottom of the screen inform us that there is a minimal biohazard in the

BL-1 lab such as with salmonella. The scientists in this lab are wearing lab coats and casually going about their work. The next lab, the BL-2 lab, is for handling pathogens with a moderate biohazard rating such as Lyme Disease and influenza. Researchers in the BL-2 lab are wearing masks and gloves in addition to the lab coats seen in the BL-1 lab. As we move on to the BL-3 lab, which has a high biohazard rating and requires multiple vaccinations, we see a much more cautious atmosphere. The scientists are wearing double-filtered masks, eye goggles, gloves, and white splash suits covering everything from the neck down. Several people are working with test tubes inside laminar flow hoods instead of on the countertops as in the other labs. We learn that the agents requiring Biosafety Level Three are anthrax, typhus, and HIV. Since many people are aware of how easy it is to become infected with the flu and of the lethality of HIV, these images establish how incredibly infectious and dangerous the germs in the next labs must be. In order to reach this next level, personnel must punch in a passcode and scan their hand at two separate maximum security doors. Entrance is then granted to the BL-4 lab, the extreme biohazard area where the subtitles explain the agents are highly virulent and with no known cures or vaccines. It is here we see Sam and Robby donning their protective bubble suits for the first time. Before they enter the lab, we witness them standing in a vestibule as a red light disinfects the surface of their suits. Once they finally enter the lab, they plug air hoses into their suits, and they move carefully around the room to work with viruses such as Ebola, Lassa, and Hanta. This brief visual tour of the increasing biohazard levels explicitly illustrates that whatever our scientist-heroes handle in their blue bubble suits is much worse than HIV. The combination of the short length of

time between infection and illness and the contagiousness of the flu with the lethality of HIV quickly brings a potential outbreak of a hot agent into perspective.

Films such as *Outbreak* that draw on scientifically sound possibilities of an epidemic with a 90% mortality rate conjure unstoppable, instinctual emotions of anxiety and fear. Preston comments, “It’s not like Alien, where people could shrug it off as science fiction. Now they’d be seeing someone come apart before their eyes and realizing that the virus could be sitting next to them in the theater. It could be anywhere.” (in Corliss & Harbison, 1994, September 5, p. 64). Past experiences, both personally and through media outlets, with illnesses and disease such as *Salmonella,* AIDS, weapons-grade anthrax, and SARS predispose many to incorporate additional images of illness into an existing emotional stress about personal health and safety. Researchers in cultural studies must consider the context of these experiences in contemplating the role of the mass media in the public’s response to illness in a climate of fear in American society.

CHAPTER 5

A SHIFT IN GERM REALITY

The idea that discussing a topic can change the way something is viewed is not a new one, nor is the idea that continuous discussion of a topic can promote substantive change in the topic at hand and create an actual shift in reality. Most often, discussions of shifting discourses are used in areas such as sociology and the humanities and less so in the hard sciences. Perhaps this is mostly due to the notion by many people that the hard sciences such as biology and physics are universal truths waiting to be discovered and therefore do not change. Using a postmodern application, pioneers in the cultural studies of science successfully demonstrate theories of representation do in fact apply.

In the previous chapters, I discussed how infectious disease discourse is created and how it can be perceived and interpreted by the receptive audience. In this chapter I now turn my focus to the impact of that discourse on reality. The biological conversation found in popular culture magnifies the impact the discourse can have on reality and intensifies a behavioral shift in the audience. Because people become paranoid of becoming infected with a disease from neighbors, family members, strangers, or even animals, some actually alter their behavior. When these behavioral changes are promoted by cultural constituents such as companies selling antibacterial products and advertising firms with marketing dollars, individual behavioral shifts can converge into a consumer shift. These collective behavioral changes can spawn a least two different types of shifts – biological and societal. Although there are other examples of biological and societal shifts associated with anxiety towards infectious disease, I will illustrate two major shifts during the last decade. First, I will discuss the biological shift that occurred with the

development of some bacteria gaining resistance to antibiotics and antibacterial agents. The second shift I will discuss is societal as it is the initial support for the Iraq War based on the threat of biological agents as weapons of mass destruction.

A Biological Shift: Antibiotic Resistance

Antibiotic resistance has become a major worldwide public health crisis. When penicillin was discovered in the 1940s and put into medical use shortly thereafter, medical personnel and the general public alike saw antibiotics as a miracle cure. Although this is true in many aspects, few people foresaw the impending lack of effectiveness in the years to come. Antibiotics are able to kill bacteria and eliminate a bacterial infection in an ill patient, but since bacteria are living organisms with a short life span and spawn multiple generations within a short time frame, they rapidly adapt to a harsh environment. In a typical demonstration of natural selection, it is the strongest bacteria that survive hostile conditions. Any bacteria that are able to survive in an environment containing antibiotics quickly replicate to produce more antibiotic-resistant bacteria.

The emergence of antibiotic-resistant bacteria in the 1990s can be directly attributed to the proliferation of antibiotic use throughout the world. The more antibiotics in use, the greater the likelihood antibiotic-resistant bacteria will thrive. This situation is exacerbated by misuse of antibiotics as well as overuse of antibiotics and antibacterial products. I contend that these two situations – the misuse and overuse of antibiotics and antibacterials – are intensified by the level of fear resulting from popular culture coverage of infectious diseases.

With the multitude of messages in the media emphasizing the danger of germs and the need to kill bacteria, many people believe all bacteria are harmful. Advertisements for products that eliminate germs in the home send the message that a sterile environment is ideal. This is not the case as it is important to remember that some bacteria are necessary for normal life, and people are dependent upon them to survive. Every person peacefully coexists with bacteria everyday, and bacteria are normally found on skin, in the gastrointestinal tract, and on mucous membranes such as the exterior surfaces in the nose, mouth and on the eyes. These bacteria perform important functions that are specific to their locations. Bacteria that are found on the skin and mucous membranes protect us from disease because they serve as space holders that prohibit pathogenic bacteria from taking up residence. Since the good bacteria are already occupying space on the surface of the skin and inside the nose and mouth, there is little room for harmful bacteria to infiltrate unavailable areas where. Serving as a placeholder, the good bacteria prevent pathogenic bacteria from invading the body and causing disease. Beneficial bacteria in the intestinal tract serve a different purpose as they assist us in digesting our food. If these bacteria are not in residence in our intestines, we are unable to efficiently digest our food and consequently waste precious nutrients. The relationship between a human body and helpful bacteria that reside on or in that body is referred to as a mutually beneficial or a symbiotic relationship where both parties gain something useful while doing no harm to the other. The overuse and misuse of antibiotics and antibacterial products eliminate these good bacteria from our bodies to our detriment.

Large scale use of antibiotics contributes to the growing problem of antibiotic-resistant bacteria. Ingested antibiotics first kill weak bacteria then slowly progress to kill

the more resilient bacteria. If antibiotics are used improperly, they will only be able to kill weak bacteria and leave behind the stronger, antibiotic-resistant bacterial strains. Once this occurs, the heartier bacteria quickly multiply because more resources are suddenly available now that the weak bacteria have been eliminated. Widespread use of antibiotics can thereby encourage growth of antibiotic-resistant strains. These resistant strains then grow in abundance and are more likely to be associated with subsequent infections.

Many Americans contribute to the problem of antibiotic resistance as they respond to a cultural emphasis towards an antiseptic environment. It is a general misconception that antibiotics are a miracle cure for most any illness. Sick patients often demand antibiotics from their physicians, but they fail to realize antibiotics are only useful for bacterial infections. Illnesses caused by viruses, parasites, or other organisms will be unharmed by a course of antibiotics. Since the common cold, the flu, and stomach bugs are often caused by viruses, demanding and ingesting antibiotics for these illnesses is pharmacologically useless. However, in order to placate patients, physicians often prescribe antibiotics when they are unnecessary. This practice was at its pinnacle in the 1990s before the general medical public recognized over-prescribing antibiotics was creating a larger public health issue. Since recognizing this fact, the trend of over-prescribing antibiotics has seen a slight decline but still remains a wide problem.

Another way patients contribute to the rise in antibiotic resistant bacteria is by failing to follow the directions of their physicians. (Although this particular problem does not directly relate to the mass media's contribution to an increase in fear of infectious diseases, it is an important piece to note when considering the context of antibiotic

resistance.) When a patient receives a prescription for antibiotics, he receives instructions to take the full course of medication. Too often, the person who is taking antibiotics will begin to feel better within a few days and will decide he no longer needs to take the prescribed medication and discontinue use. By taking only a portion of the medication that was prescribed for him, he actually places his health in peril since the antibiotic may not have been ingested long enough to kill not only the weak bacteria but also the heartier bacteria. If bacteria are able to survive during the first few days of antibiotic treatment, the stronger bacteria will begin to proliferate and may cause a relapse. If this occurs, the second course of illness will be more difficult to treat since the bacterial infection consists of a stronger strain that is more resistant to antibiotics. The physician will have to prescribe stronger antibiotics, but it is possible these antibiotics will not be effective. "[B]y encouraging the growth of resistant pathogens, an antibiotic can actually contribute to its own undoing" (Levy, 1998, p. 35). Depending upon the type of bacteria and its level of infectiousness, the patient may subsequently share the bacteria with strangers, acquaintances, and loved ones and spread the resistant bacteria throughout the community.

In a similar fashion, people can contribute to the problem by self-medicating with an unconsumed portion of an antibiotic prescription. Although this may be well-intentioned, self-medicating or medicating a loved one with half a prescription still results in the same problem. Only the weak bacteria are killed, leaving behind a stronger strain of bacteria to grow and spread.

The marked proliferation of antibacterial products in today's market clearly exacerbates the issue. In 1994, only about a dozen household products contained

antibacterial agents, but in 2001, approximately 700 products were available (Levy, 2001). “Germs have become the buzzword for a danger people want to eliminate from their surroundings. In response to [advertising] messages, people are buying antibacterial products because they think these products offer health protection for them and their families” (Levy, 2001, p. 512). The number of products continues to climb and includes a wide range of goods from antibacterial soaps and wipes to mattresses and linens containing antibacterial agents. Many of these products are extremely popular in the United States, and people continue to purchase these products in substantial quantities without realizing large-scale usage of these products can impact consumer health.

Scientists are concerned about the upward trend of the use of antibacterial agents within the ordinary household. The steady increase in the consumption of antibacterial agents from these widely available products compounds the current issue of antibiotic resistance. Both the overuse and misuse of antibiotics select bacteria that are resistant to antibiotics and antibacterial agents since both types of agents kill weak pathogens first, sometimes leaving the stronger ones behind to multiply and gain a solid foothold. Stuart Levy (2001) conducted scientific experiments to determine the effect of antibacterial agents and found that the “data clearly suggest that antibacterial agents will have an impact on the environmental flora and on resistance emergence” (p. 513). His findings demonstrate the overuse of the antibacterial product has a direct effect on our biological world. We are now beginning to see the large-scale impact of the overuse of antibiotics and antibacterial agents in the public health arena. Both multidrug resistant tuberculosis (MDR-TB) and community methicillin-resistant *Staphylococcus aureas* (cMRSA, pronounced mur-sah) are growing problems worldwide. Findings in a recent study

suggest that there is a link between MRSA and excessive antibacterial usage (Akimitsu et al., 1999).

A second concern for scientists about the overuse of antibacterial agents is a potential impairment of the immune system as a result of reduced exposure to germs. Many scientists support this notion, which is often referred to as the hygiene hypothesis. The hypothesis posits that too much hygiene prevents the body's immune system from properly functioning because it fails to expose the immune system to common germs on a regular basis. This in turn may lead to a greater chance of developing allergies, asthma, eczema and related health problems. Similar to the mind as a muscle analogy, Rook and Standford (1998) propose a person must exercise her immune system through exposure to germs. Too much hygiene prohibits this exercise by reducing exposure to the normal, mostly nonpathogenic bacteria and viruses that one encounters on a daily basis. The present emphasis on hygiene in the United States is intensified by a mass-mediated discourse.

Antibiotic use on a massive scale may contribute to the problem of too much hygiene. Some infants begin receiving antibiotics a mere few days after birth and "mature in an antibiotic-laden environment" (Levy, 2001, p. 514). The long term effects of antibiotic use in newborns are unknown. Additionally, many people regularly ingest meat from livestock that receive a daily dosage of antibiotics in order to accelerate muscle growth and bulk. Cows and chickens that are given antibiotics are larger in comparison to those that do not receive an antibiotic supplement and are therefore worth more per invested dollar. Again, this being a relatively new practice, the long-term effects of regularly ingesting antibiotic-laced meat is unknown.

The growing problem of antibiotic resistance is a culmination of contagious discourse between people, corporations, and mass media vehicles. People demand antibiotics and antibacterial products because of a misunderstanding of their usefulness as well as a cultural emphasis on hygiene and a germ-free environment. Corporations capitalize on and intensify this cultural emphasis by providing and promoting unnecessary antibacterial products to consumers. Finally, mass media sites serve as conduits for contagious discourse and filter the conversation however they desire.

A Sociological Shift: Weapons of Mass Destruction

A different kind of shift resulted from the discourse around biological weapons in the hands of enemies of the United States. Increasing conversations after September 11 about the possibility of Iraq developing and maintaining weapons of mass destruction (WMD) intended for military use created a societal shift in reality as it led to increasing support for declaring war with Iraq in 2003. It is crucial to examine the context of the discourse, especially regarding mass media attention, as the intense coverage of recent terrorist attacks of 9/11 and of the use of anthrax as a biological weapon served to heighten the fear and anxiety of Americans across the nation.

To demonstrate how fear can result in a sociological shift, Karen Anijar, John Weaver, and Toby Daspit (2004) employ science fiction as a means to frame present realities and project these realities into future possibilities. Part of their discussion includes how our current reality incorporates an insane “illusion of management and control” (p. 12) that partly manifests as paranoia. In the past, we managed threats against the free world from the Soviet Union during the Cold War by building a nuclear arsenal. They argue that in the absence of “external” threats after the Cold War ended, we

constructed internal threats to absorb our displaced need for control. What has resulted is a "reality of fear [that] has lead to the creation of insane forms of logic" (p. 13) such as addressing the problem of homelessness by passing laws against panhandling instead of addressing the underlying socioeconomic conditions that create and exacerbate the issue.

In what could be described as irrational logic, President George W. Bush pushed the United States to declare war against Iraq in early 2003. The President argued that Saddam Hussein did not recognize the authority of the United Nations and had refused to cooperate with the United Nations inspectors since the end of the Gulf War. In the background paper for the President's speech to the United Nations General Assembly (Office of the President of the United States, 2002, September 12), the White House outlined a "decade of deception and defiance" by Hussein, detailing his failure to comply with sixteen multifaceted U.N. Security Council Resolutions since 1990. The paper also included his history of repression of the Iraqi people, support for international terrorism, and development of weapons of mass destruction, including biological, chemical, and nuclear weapons and ballistic missiles.

To underscore the concern of biological weapons and capitalize on the fear of illness, Colin Powell, in his February 2003 speech to the U.N. Security Council, held a small vial of simulated anthrax to demonstrate how easy it would be to conceal a minute quantity of anthrax spores capable of killing thousands of people. The dramatization of the vial had its desired effect:

> More than any murky satellite photo, Powell's prop – designed to show the world how much terror Saddam Hussein could unleash with a fraction of his secret weapons stockpile – would become the enduring image of the historic session at

the United Nations. On the eve of war, and the eve of possible terrorist attacks, it looked like the sum of all fears. (Wolffe & Klaidman, 2003, February 17, p. 28)

Although the U.N. Security Council decided against a war resolution, President Bush and Prime Minister Tony Blair forged ahead without the United Nation's support to lead the United States and England in a campaign to unseat Saddam Hussein in the second Iraqi War.

However, before Bush was able to declare war against Iraq, he had to win to support of the American public and politicians so that Congress would grant an American declaration of war. The White House cleverly used the repetitive nature of the news media to aid in this endeavor. Not long after the terrorist attacks on the World Trade Center and the Pentagon on September 11, 2001, President Bush often mentioned Osama bin Laden or Al Qaeda in the same sentence with Saddam Hussein, alleging a connection between the two without actually stating it. Americans were bombarded with news media covering the unfolding efforts in the war on terrorism and heard the message – the unspoken connection – repeatedly. What was heard less often was the fact that there was no evidence available to the public that established a connection between the attacks of 9/11 and Saddam Hussein. Still, many Americans supported the attempt to unseat Hussein, who was a part of Bush's proclaimed "Axis of Evil," with the belief that the endeavor was directly related to the efforts to bring those responsible for the deaths of thousands of U.S. citizens to justice.

The perception of the case for war was aided by the repetitive images on television and other mass media outlets such as newspapers, magazines, and the internet. Although the majority of the television news channels and programs eventually chose to

curtail the constant replays of the airplanes crashing into the Twin Towers and the surreal crumbling of an icon of the New York skyline and American ingenuity, the images were already permanently imbedded in the minds of many Americans. Colin Powell's vial of simulated anthrax was featured on the news and splashed across the front page of many newspapers and covers of several magazines. Additionally, coverage of the war on terror was continuous, featuring soldiers in Afghanistan searching for Al Qaeda operatives and Osama bin Laden. Media spin depicted the complex choreography of events as a war against the American way, inciting many Americans to support the President's initiatives in order to diminish the powers of those belonging to the Axis of Evil (Iraq, Iran, and North Korea). Many Americans and others believed that Saddam Hussein represented an immediate threat to personal safety and the safety of the nation, particularly in the light of the evidence provided to the public about Hussein's secret arsenal of weapons of mass destruction.

Considering these findings, it is important for all Americans to deliberate the reasons they supported the decision to forcefully remove Saddam Hussein from power. I argue that the ongoing discourse of contagion and the priming effect, combined with the images of terror (the World Trade Center collapse) and potential of biowarfare (Powell's vial and accompanying illustrations of mobile germ laboratories) ultimately shaped our present reality by generating support for war based on safety concerns.

President Bush is not the first President of the United States to take advantage of the power of the media. B. W. Wright (2001) explains:

> Franklin D. Roosevelt well understood the power of modern media to influence public attitudes. Having made skillful use of the media to further his policies

> during the Depression, he did so again in wartime… The [Office of War Information] urged entertainment producers to voluntarily conform to administration guidelines and ask themselves of all their products, "Will this help win the war?" But administration officials were also sensitive to the ineffectiveness of and potential backlash against messages that reeked too heavily of sheer propaganda, and they wished to avoid the sort of ugly intolerance and hatred generated by U.S. propaganda during World War I. So the OWI asked the entertainment industry to raise American morale, encourage public cooperation and participation in the war effort, identify the menace of the Axis powers, and inform audiences about the progressive war aims pursued by the United States and its allies, all in ways that cloaked propaganda within the context of good entertainment as much as possible. (p. 34-35)

The mass media can and often is used as a manipulative tool to serve political ends, both as pure entertainment and as "news." Williams (1974) explains that "broadcasting can be diagnosed as a new and powerful form of social integration and control. Many of its main uses can be seen as socially, commercially and at times politically manipulative" (p. 17).

Although it is plausible to contend the level of fear would have existed without media attention, I argue that it is fair to claim the media attention served a specific function in reaching this level of fear. As I described in the first chapter, the overall response to the anthrax attacks was highly chaotic and unsatisfactory. Even though members of the news media were able to provide some answers to questions in their coverage of the recent attacks, they also kept these attacks and the emotions that accompanied them at the forefront of our minds. Therefore, the fear was not allowed to

subside. President Bush, whose justifications for going to war with Iraq have been highly criticized, carefully crafted his message to use people's emotional response to 9/11 and trust in science to his advantage.

Throughout his time as President of the United States, President George W. Bush often used science as a way to support his arguments at any given time. Since scientists are sometimes in disagreement with one another about scientific theories, President Bush and his advisors simply chose the supporting evidence of the theory that bolstered the argument he desired to make. Alternatively, at times the White House would suppress the scientific voice from the conversation through political means. Representative Henry A. Waxman, democratic congressman from California, outlines President Bush's maneuvers using science in a recent report (United States House of Representative Committee on Government Reform Minority Staff Special Investigations Division, 2003, November 13). Representative Waxman demonstrates that President Bush regularly impedes science by manipulating scientific advisory committees, misrepresenting and censoring scientific information, and interfering with scientific research. "The Administration's political interference with science has led to misleading statements by the President, inaccurate response to Congress, altered web sites, suppressed agency reports, erroneous international communications, and the gagging of scientists" (p. i). By selecting parts of scientific evidence or theories or by eliminating scientific voice from the discussion, President Bush used the people's faith in science to his political advantage.

In preparing to go to war against Saddam Hussein, President Bush continued this tactic. He used previous information regarding biological weapons in Iraq and partnered this knowledge with recent American experiences with biological events such as fears

associated with SARS and anthrax. The claim that Iraq maintained weapons of mass destruction and was prepared to use them against its enemies was a critical argument for invading Iraq and declaring war. In his State of the Union address in 2002, President Bush made the impending danger to American life from the threat of weapons of mass destruction very clear:

> [W]e must prevent the terrorists and regimes who seek chemical, biological or nuclear weapons from threatening the United States and the world…
>
> [Our goal] is to prevent regimes that sponsor terror from threatening America or our friends and allies with weapons of mass destruction. Some of these regimes have been pretty quiet since September the 11th. But we know their true nature. North Korea is a regime arming with missiles and weapons of mass destruction, while starving its citizens.
>
> Iran aggressively pursues these weapons and exports terror, while an unelected few repress the Iranian people's hope for freedom.
>
> Iraq continues to flaunt its hostility toward America and to support terror. The Iraqi regime has plotted to develop anthrax, and nerve gas, and nuclear weapons for over a decade. This is a regime that has already used poison gas to murder thousands of its own citizens – leaving the bodies of mothers huddled over their dead children. This is a regime that agreed to international inspections – then kicked out the inspectors. This is a regime that has something to hide from the civilized world.
>
> States like these, and their terrorist allies, constitute an axis of evil, arming to threaten the peace of the world. By seeking weapons of mass destruction, these

> regimes pose a grave and growing danger. They could provide these arms to terrorists, giving them the means to match their hatred. They could attack our allies or attempt to blackmail the United States. In any of these cases, the price of indifference would be catastrophic. (Office of the President of the United States, 2002, January 29, para. 13-21)

Without this sense of immanent danger, he purposes for military maneuvers within Iraq's borders probably would have met with more resistance.

As is often the case, the context of the unfolding events leading to the Iraq War is a critical part in the analysis. Americans had a sense of immanent danger after witnessing the murderous acts of the 9/11 attacks on American soil, and "the vast majority of Americans believed, because the Bush administration had implied it, that Saddam Hussein had something to do with the al Qaeda attacks on America" (Clarke, 2004, p. ix). Although the claim of biological weapons in Iraq significantly contributed to support for the war, it may have been less of the case if it had not been for the recent terror that many Americans experienced on that horrible day. Richard A. Clarke (2004), former U.S. Terrorism Czar and advisor to the Reagan, George H. W. Bush, Clinton, and George W. Bush administrations, expresses how President Bush helped mislead the American people into believing the military invasion of Iraq was retaliation for the 9/11 terrorist attacks:

> In his famous "Top Gun" moment on the deck of the *USS Abraham Lincoln*, the President claimed that the invasion of Iraq was just one battle "in the War on Terrorism that began on September 11." It is not hard to understand why, after repeatedly hearing remarks like that, 70 percent of the American people believed that Saddam Hussein had attacked the Pentagon and the World Trade Center. I

> suspect that many of the heroic U.S. troops who risked their lives fighting in Iraq though, because of misleading statements from the White House, that they were avenging the 3,000 dead from September 11. What a horrible thing it was to give such a false impression to our people and our troops. Only in September 2003, only after occupying Iraq, only after Vice President Cheney had stretched credulity on *Meet the Press*, did the President clearly state that there was "no evidence that Iraq was involved in the September 11 attacks." (Clarke, p. 268)

The sense of terror and need for retribution provided a foundation upon which the administration built its case for war regardless of whether or not the terrorist attack was related to Saddam Hussein or Iraqi people in general.

Not only was President Bush forced to later clarify the nonexistent connection between Saddam Hussein and the 9/11 attacks, but he also faced escalating questions about the purported evidence of WMDs. A claim made by President Bush in his State of the Union address in January 2003 that "the British government has learned that Saddam Hussein recently sought significant quantities of uranium from Africa" (Office of the President of the United States, 2003, January 28, para. 67) was disputed by the CIA, and the story unfolded in the glare of the news media. This revelation of the faulty representation of intelligence reports again called into question the credibility of the President's case for war. Compounding this is the failure of American troops and other officials to uncover any secret arsenals of WMD or any evidence the WMD production had occurred within the past few years. To date, evidence of weapons of mass destruction after 2001 in Iraq has never been found. The Senate's Report of the Select Committee on Intelligence on the United States Intelligence Community's Prewar Intelligence

Assessments on Iraq (2004, July 9) concludes most of the key judgments of Iraq's ongoing WMD programs were "either overstated, or were not supported by, the underlying intelligence reporting" (p. 14).

Ultimately, the political landscape of the world is changing. The removal of Saddam Hussein from power contributed to escalating violence in the Middle East, including violence towards the United States and its allies. Although the invasion of Iraq was not solely based upon claims of weapons of mass destruction and the disintegrating political climate of the region is not solely due to the Iraq War, the fear of infectious diseases in the form of biological weapons was an important piece in the domino effect that is currently unfolding around the globe.

Concluding Thoughts

In our postmodern world, we are continuously bombarded by mass media messages. The constant availability of hundreds of television channels and billions of web sites at our fingertips adds to the volumes of accessible films, books, newspapers, and magazines. In the midst of this media blitz that primarily defines present-day popular culture are repetitive messages and images of the risks of infectious diseases.

As we read infectious disease texts, we integrate perceptions of contagion into our consciousness and adjust our behaviors to minimize personal risk. This endlessly evolving representation of infectious illness is impacted by a cultural lens that should be examined to identify what information passes through the cultural filter and why. We should always question the motives of those with the power to control messages in the mass media, and we should continue to reflect on how these messages influence our side of the conversation. Since contagious discourse has the power to change our behaviors

and consequently to transform our world – sociologically and biologically – we must recognize mass media texts for what they truly are: curricula.

As I have demonstrated, a biological reality shift resulting from behavioral changes can have a negative impact on society as a whole. In order to lessen the effect of this problem in the future, a collective approach to change is truly needed. A historical review of public reaction to contagious diseases, particularly reactions associated with news and images within the mass media, strongly suggests that regular, honest communication is imperative in order to maintain the trust of the people. Of comparable importance, people must be treated equally in the provisions for dealing with outbreak containment and preventative measures since unfair treatment propagates distrust throughout society. Otherwise, reports of inequality inevitably will appear within mass media messages, and the public reaction to the outbreak will be laced with unnecessary panic and chaos.

Because of the possible effects mass media can have on society, it is important for educators to equip people with the ability and the desire to question both scientific doctrine and cultural influences on science. In doing so, people will be more able to recognize some of the issues related to the creation of the scientific message of contagious diseases within popular culture. Producers and consumers of science-infused mass media should demand the current misrepresentation of risk be rectified by placing more attention towards diseases with high rates of incidence; decreasing the sensationalistic focus on hot microbes, graphic effects, and free-floating signifiers; and deemphasizing profits within journalistic practices. Agenda setters should recognize their role in all of these issues and help guide the discourse towards a proportional discussion.

Additionally, we all must recognize popular culture as a major source of knowledge and not dismiss it as low culture or entertainment for the masses. Furthermore, we must concede that all people involved in the creation of contagious discourses are a part of popular culture. This includes scientists and political leaders since they often use media to further their professional agendas. In doing so, they become position themselves in the popular cultural cycle, and science itself becomes popular culture.

Those who are mostly responsible for creating knowledge within popular culture should recognize that selecting this knowledge bears responsibility. Signs that signify contagious diseases and provoke emotions of terror should be used with caution, particularly with nonfiction as the Cuisinart effect can distort associated risks and alter both our behaviors and reality as a result. Producers and consumers of popular culture related to contagious diseases should recognize how extensive media coverage can affect behavior. Massive coverage may have a long-lasting, priming effect given that previous experiences serve as foundations for future experiences. Additionally, they should recognize the perception of risk may be skewed because of substantial amounts of media coverage, and knowledgeable consumers in particular should demand a more proportional treatment of contagious diseases based on incidence rates. Most especially, consumers must learn to recognize that all nonfiction contains threads of fiction; all stories that claim to be nonfiction have elements of fiction within them either to sensationalize the story or through construction of the narrative itself. Science teachers and others who are knowledgeable in the cultural studies of science should always emphasize that claims of scientific truth must be continually questioned.

Steps towards any of these recognitions should help alleviate some of the problems with contagious discourses. Consequently, it is crucial for teachers to bring these elements into the science classroom at all levels of education. This establishes a lasting impression that science and the representation of science are constructed through a cultural lens that should be constantly examined.

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