
DEMOCRATIZING PUBLIC HEALTH: CITIZEN EMPOWERMENT THROUGH THE BIOTHRILLER GENRE

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Abstract

*Preparedness—the process of readying for emerging threats—is central to contemporary public health, which strives to anticipate potential problems instead of reacting to medical disasters. However, this concept resonates little outside of elite policymaker circles. Instead, many Americans assume policymaking is an inherently reactive process that rewards politicians for “fixing” existing problems. For example, while the prospect of a pandemic influenza outbreak represents one of American’s most pressing concerns, surveys report pervasive public ignorance about many aspects of preparedness and public health, including disease transmission, prevention practices, and the relationship between zoonological and human diseases. For many Americans, it seems, exposure to such issues comes not through first-hand experience or even governmental education efforts, but through the fictional world of “biothrillers.” Biothrillers are a distinct genre of movies, novels, and television shows that depict humankind’s efforts to survive novel and extraordinarily dangerous diseases. Because an informed citizenry is vital to a healthy functioning democracy, this paper considers the capacity of biothrillers to democratize public health by educating citizens about preparedness as well as the risks associated with the emerging diseases. To what extent do biothrillers empower citizens to draw informed conclusions and make informed decisions about contemporary public health practices and health risks? Can biothrillers compensate for scant government education efforts, thereby helping to close the knowledge gap between medical and political elites and the public writ large? This paper examines three prominent biothrillers, Wolfgang Peterson’s 1995 film *Outbreak*, Richard Pierce’s 2006 film *Fatal Contact: Bird Flu in America*, and Steven Soderbergh’s 2011 film *Contagion*. It finds that although biothrillers vary in the extent to which they present accurate depictions of the risks associated with emerging diseases as well as the general practice of public health, most of these films fail to empower citizens to become active participants in the procurement of public health. This shortcoming is largely a testament to the films’ portrayal of citizens as helpless and passive victims. The one exception to this rule is *Fatal Contact*, which depicts the efforts of neighborhood groups to form ad-hoc influenza monitoring and response programs.*

Introduction

In the wake of the September 11, 2001, terrorist attacks the concept of “preparedness” emerged as a prominent “buzzword” within American policymaking circles. The Federal Emergency Management Administration (FEMA) broadly defines preparedness as “a continuous cycle of planning, organizing, training, equipping, exercising, evaluating, and taking corrective action in an effort to ensure effective coordination during incident response” (Federal Emergency Management Administration 2013). American policymakers thus adopted an “all-hazards” approach to risk reduction, which set out to reduce existing vulnerabilities to not only future acts of terrorism but also an array of natural and man-made threats (Birkland 2009).

Preparedness is by no means a novel idea. Many policy areas have long sought to ready for emerging threats. Preparedness is central to American public health, which builds from the assumption that the proactive identification and prevention of disease is essential to ensuring a healthy population. This assumption manifests itself in a diverse array of government programs, ranging from childhood anti-obesity campaigns to global disease surveillance. In fact, one observer went so far as to deem the Centers for Disease Control and Prevention (CDC), arguably the preeminent public health institution in the U.S., a

“sentinel” for public health, a label that underscores the agency’s responsibility for scanning the globe for emerging threats (Etheridge 1992).

Despite its importance to contemporary public health and despite politicians’ grandiose claims that America would never again be caught off guard, preparedness remains chronically undervalued—and underfunded. A 2009 study by political scientists Andrew Healy and Neil Malhotra found that every \$1 spent on preparedness results in roughly \$15 savings in terms of future damage mitigation. However, federal spending is overwhelmingly allocated to disaster relief, a practice reinforced by electoral realities. Specifically, the study shows incumbent presidential candidates enjoyed significantly higher electoral gains after they granted disaster relief funds while virtually no electoral benefits were conferred for preparedness efforts (Healy & Malhotra 2009).

Preparedness seems to be equally undervalued by the academy. The vast literature on public policy, for example, assumes a *reactive* mode of governance wherein policymakers respond to manifest problems as opposed to anticipating emerging threats. Political scientist Hal Colebach writes “The dominant paradigm in texts on policy practice sees the policy process as an exercise in informed problem-solving: a problem is identified, data is collected, the problem is analyzed and advice is given to the policymaker, who makes a decision which is then implemented” (2006, 309). He adds that the “textbook account” of the policy process assumes policymaking is a process leading to a “known and intended outcome: it is a collective attempt to construct a policy in order to address some evident problem” (311).

Given this pervasive lack of government and academic interest in preparedness, it’s not surprising that public knowledge about preparedness and disease prevention is scant at best. A 2011 survey by the EcoHealth Alliance, an international research organization dedicated to studying biodiversity and public health, showed that while many Americans harbor significant fears about the prospects of a major disease outbreak, they lack basic knowledge about prevention practices and disease transmission. The survey found the threat of global disease outbreak ranks fourth among Americans’ top five catastrophic event concerns, topped only by economic collapse, natural disasters, and a terrorist attack. More than two-thirds (68%) of Americans were somewhat worried about the prospect of a global pandemic. Yet fewer than one in five Americans were aware that the next great pandemic virus is most likely to originate in animals, requiring some sort of genetic mutation before it can pass from human-to-human. Equally concerning, less than a third recognized the role climate change and hunting play in promoting the spread of disease from animals-to-humans (EcoHealth Alliance 2011)

Commenting on the survey Peter Daszak of the EcoHealth Alliance states, “We’ve done a great job of selling what an outbreak would look like—very dramatic and tragic. But the real tragedy is that we’re still doing the things that would cause the next pandemic even if we have the vaccine for the last one” (Peoples 2011). In many ways, the survey illustrates a fairly well documented knowledge divide between medical elites and the general public. Although these divisions are to some degree the result of disparities in education, an informed and engaged citizenry is critical to a well-functioning public health system. Molly Land, Associate Professor of Law at New York University, and Neil Pakenham-Walsh, co-director of the Global Healthcare Information Network, commented on the importance of an informed citizenry in their 2013 guest blog entry. The authors write:

Access to information is critical for the protection of a variety of international human rights, particularly the right to health. Lack of access to information, and especially to basic healthcare knowledge, continues to be a major contributor to avoidable death and suffering. Every day, tens of thousands of children, women, and men die needlessly for want of simple, low-cost interventions—interventions that are often already locally available (Land & Pakenham-Walsh 2013).

Thus, when it comes to public health, an informed citizenry is far more than abstract philosophical ideal. Instead, it constitutes a proverbial “best practice,” as knowledgeable and empowered individuals are more likely to make *better* health choices and are *better* equipped to act preventatively—a core tenet of public health.

In the absence of a sustained commitment to educating about public health and preparedness, popular forms of media, like movies, novels, and even video games, have come to represent an important source of information. From Fox television's medical drama *House* to Michael Crichton's classic 1971 novel *The Andromeda Strain*, the entertainment industry is rife with depictions of epidemics, diseases, and germs. Many of these works are loosely categorized as biothrillers, a broad genre of books, movies, television shows, and other forms of popular media focusing on humankind's efforts to survive outbreaks of dangerous germs and diseases.

To what extent do biothrillers provide an accurate depiction of emerging diseases, public health, and government preparedness? Can biothrillers help educate the general public about basic public health practices? Better yet, can they empower the public to actively participate in the provision of public health, closing the above-described gulf between medical elites and citizens? This paper probes these questions by examining three well-known biothriller films, Wolfgang Peterson's *Outbreak* (1995), Richard Pierce's *Fatal Contact: Bird Flu in America* (2006), and Steven Soderbergh's *Contagion* (2011). By treating each film as a separate "case study" in preparedness and disease transmission, this paper examines the capacity of biothrillers to serve as vehicles for public empowerment.

Disease Transmission, Preparedness, and the Biothriller Genre

Ruth Mayer's 2007 study of the rhetoric of virus discourse within the biothriller genre argues biothrillers are uniquely positioned to influence Americans' "political unconscious." A distinctive blend of fact and fiction, fantasy and reality, the biothriller genre has long been trumpeted as an important setting for reflecting on contemporary threats. The "diseases" depicted in biothrillers can act as a powerful portrayal of "real" virological threats as well as a metaphor for other concerns, ranging from globalization to terrorism, social disintegration to immigration. So powerful is the biothriller that it has even been shown to influence the highest echelons of political power. Former President Bill Clinton, for example, is said to have expanded the U.S. military's capacity to respond to bioterrorism after reading Richard Preston's *The Cobra Event*, which depicts the weaponization of an incurable virus.

Because the viral outbreaks they depict are often partially grounded in reality, this study hypothesizes that biothrillers will provide fairly accurate information about the risks and dangers associated with contemporary emerging diseases. Commenting on the MEV-1 virus imagined in Steven Soderbergh's 2011 film *Contagion*, Pulitzer Prize winning author and senior fellow for global health at the Council on Foreign Relations Laurie Garrett wrote, "The hypothetical MEV-1 in 'Contagion' is based in parts of the Nipah virus that first surfaced in Malaysia in 1998, the Chinese SARS outbreak of 2003, H1N1 swine flu in 2009, Ebola in Kikwit in 1995 and government reactions to the anthrax mailings of 2001. It is part fantasy, part reality and totally possible" (2011). On the other hand, virtually no one has so much as implied biothrillers present accurate depictions of governmental preparedness activities, if at all. If Mayer's (2007) argument that biothrillers reflect entrenched social norms is in fact true, then we should not expect these films to provide an accurate depiction of public health institutions and practices. Indeed, as indicated above, anticipation and preparedness are generally overlooked in policy and academic circles, let alone within the film industry.

This paper uses a comparative case study design to explore the biothriller genre's depiction of emerging diseases, public health, and preparedness. It examines three prominent biothriller films, Wolfgang Peterson's *Outbreak* (1995), Richard Pierce's *Fatal Contact: Bird Flu in America* (2006), and Steven Soderbergh's *Contagion* (2011). This study answers the following questions: To what extent do biothrillers provide accurate depictions of the nature and relative risks of contemporary emerging diseases? To what extent do biothrillers provide an accurate depiction of public health and government preparedness? Finally, can biothrillers help empower citizens?

While these films depict largely fictional events, this study treats each as a distinct "case" in order to investigate whether it provides an accurate portrayal of emerging diseases and government preparedness. Based on the above analysis, this study hypothesizes that although the biothrillers will provide relatively accurate depictions of disease risks and transmission, they will present inaccurate and insufficient

depictions of public health and preparedness. The remainder of the paper is dedicated to qualitatively testing these hypotheses.

The following section provides a brief summary of *Outbreak*, *Fatal Contact*, and *Contagion*. The paper then explores how these three films depict the relative risks associated with emerging diseases as well as the process of disease transmission. The third section examines each film's depiction of the American public health system, paying careful attention to their treatment of the practice of preparedness. The paper closes by commenting on key findings as well as the capacity of biothrillers to empower citizens.

Take Two! A Summary of Outbreak, Fatal Contact: Bird Flu in America, and Contagion

Outbreak and *Contagion* were blockbuster Hollywood films, each grossing over \$100 million in domestic box office sales (Box Office Mojo 2013). *Fatal Contact*, by contrast, was a "made-for-television" movie aired by ABC in 2006. While not competitive with the other two films in terms of its budget size or cast, *Fatal Contact* is struck from the same creative mold as *Outbreak* and *Contagion*. All three movies are based on or influenced by *real* disease events. This unifying thread is a critical point of comparison between *Outbreak*, *Fatal Contact*, and *Contagion*, as many biothrillers instead imagine highly improbable (i.e. zombie outbreaks or intergalactic germs) disease events. By relying on this selection criterion, this study employs a most similar case study design.

Outbreak, 1995

Wolfgang Peterson's 1995 movie *Outbreak* describes the spread of a fictitious disease, the Motaba virus, in the small town of Cedar Creek, California. Originating in Zaire, Motaba causes severe fever, organ failure, hemorrhaging, and eventual death. The film chronicles the efforts of Colonel Sam Daniels, a virologist at United States Army Medical Research Institute of Infectious Disease's (USAMRIID), to identify an effective antibody against the disease and save the people of Cedar Creek. However, the corrupt Major General Donnie McClintock, who is more concerned with weaponizing the deadly disease than developing a cure, stymies Colonel Daniels's efforts and threatens to bomb Cedar Creek in order to contain the outbreak.

The movie's opening scene depicts a 1967 outbreak of Motaba at a U.S. military base outpost in Zaire. Unbeknownst to anyone except a handful of high-ranking U.S. government officials, including Major General McClintock and Daniels's immediate superior and friend Brigadier General Billy Ford, the U.S. government responded to the outbreak by bombing the camp, killing all military personnel. The bombing was seen as the only way to contain the disease. The government did, however, extract samples of the virus, which were used to develop a biological weapon as well as a vaccine.

Fast-forward to the present, presumably around 1995. Colonel Daniels is sent to Zaire to investigate the outbreak of a "new" virus in the Motaba region of Zaire. After encountering the novel Motaba virus, Colonel Daniels requests an immediate global public health warning, but is met by resistance by Brigadier General Ford. Ford insists the chances of the disease spreading to the U.S. are remote. Meanwhile, a worker at a biotest facility in California named "Jimbo" steals an infected monkey off a cargo ship returning from Zaire. Jimbo tries to sell the animal at a pet store in Cedar Creek, but the store's owner refuses to purchase the animal. The monkey infects Jimbo and the pet store owner. With no use for the monkey, Jimbo releases the animal into a forested area close to Cedar Creek. A sickened Jimbo then flies to Boston, where he infects his girlfriend. Both Jimbo and his girlfriend die as a result of the virus, but the Boston outbreak is fortunately contained.

Back in California, a lab technician testing the now deceased pet storeowner's blood inadvertently infects himself with the virus. This constitutes a critical moment in the movie, as the lab technician's strain mutates into an airborne strain capable of transmitting itself from human-to-human via a cough or sneeze. Unknowingly infected with the new airborne strain, the technician goes to a movie theater in Cedar Creek where he sneezes and spreads the virus to scores of residents. This marks the beginning of the Cedar Creek outbreak. Within days, much of the town is infected.

By the time news of the outbreak reaches government officials, thousands of Cedar Creek residents are suffering and dying from the virus. Disobeying Brigadier General Ford's demand that he avoid Cedar Creek and instead report to Mexico to investigate a totally unrelated disease, Colonel Daniels and his team rush to the sight of the Motaba outbreak. Upon his arrival, marshal law is implemented, preventing all transportation in and out of the community and severing all communications. Much to Colonel Daniels's surprise, residents are being treated with a mysterious drug, which he later learns is the vaccine derived from the 1967 strain. The drug is ineffective, however, as most residents are infected with the newly mutated airborne strain.

Daniels soon learns a more nefarious plan is afoot. Determined to weaponize the new strain, Major General McClintock and a slew of other military officials convince the U.S. president that bombing Cedar Creek is the only way to contain the outbreak. The looming threat of total annihilation for the people of Cedar Creek, one of whom happens to be Colonel Daniels's ex-wife CDC scientist Robby Keough, sends Colonel Daniels on a mad chase to identify the original host of the virus—the female monkey released by Jimbo. Colonel Daniels eventually captures the animal but with little time to spare before the bombing campaign. Monkey in tow, Colonel Daniels intercepts the bombers headed to Cedar Creek and convinces the pilot to delay the operation. The pilot obliges, allowing Colonel Daniels to return to Cedar Creek and mass-produce a vaccine, just in time to save his ex-wife as well as thousands of others. Major General McClintock is promptly removed from his post and reprimanded for misleading the U.S. President.

Fatal Contact: Bird Flu in America, 2006

Richard Pearce's *Fatal Contact: Bird Flu in America* describes the likely medical, social, and political implications of an H5N1 avian influenza pandemic. H5N1 avian influenza or "bird flu" is in fact a real virus that originated in the Guangdong Province of China in 1997. H5N1 garnered considerable attention within the public health community, as many feared this deadly strain of influenza would mutate into an airborne strain—capable of easily transmitting from human-to-human—and spark a global pandemic, which refers to a significant amount of human cases spread across a large geographic area.

The movie follows the pandemic over a period of weeks and traces a series of interrelated plot lines, exploring the pandemic from the perspective of a family, a nurse, a group of high-ranking public health officials, and a state governor. The movie fittingly begins in Guangdong, China where Chinese officials are collecting and culling birds at an open-air food market in an attempt to squelch an outbreak of H5N1. The scene closes by showing a small girl hiding her father's poultry flock in a basket in their home, a stark depiction of the futility of these types of eradication efforts. Meanwhile, an American businessman named Ed Connelly visits a manufacturing facility in the province where a number of workers are infected with the virus. Connelly is infected with the virus and will soon become "patient zero" in the U.S.

During his travels home, Connelly infects a number of other individuals, including at least one person at the boarding area, a bartender, a bar patron, and various individuals on his return flight. By the time Connelly returns, American public health officials are well aware of the Guangdong situation. Dr. Iris Varnack of the Epidemic Intelligence Service is dispatched to the region to investigate the outbreak. Upon her arrival, she quickly realizes the situation is far worse than originally imagined. Her colleague in Guangdong informs her that the outbreak has already infected more than 25 individuals, diminishing any hope of containing the virus.

Ed Connelly dies shortly after returning to the U.S. Dr. Varnack visits him at the hospital and confirms that his mysterious illness is in fact H5N1. With pandemic looming, state governors from across the country are briefed on the disease. The President as well as the Secretary of the Department of Health and Human Services, Collin Reed, convene press conferences, alerting the public and media of the outbreak. H5N1 spreads across the country in days, triggering mass panic and lawlessness. Secretary Reed is an important character, as he spearheads much of U.S. pandemic preparedness and response efforts. He later dies from H5N1.

Another important plot line centers on the efforts of Virginia Governor Mike Newsome to contain the spread of the virus in his home state of Virginia. Governor Newsome initially calls for a strategy of

isolation, requesting a blockade of all U.S. ports. Unable to dictate federal policy, he eventually focuses his attention on Virginia, which also happens to be the home of Ed Connelly's family. Governor Newsome initiates mandatory quarantines across the state while barricading his administration and family in an underground bunker. His strategy prompts community uproar and isolated citizens struggle to obtain food and water. Governor Newsome reverses his isolationist policy after his diabetic son dies because he was unable to obtain insulin in the bunker. In the wake of this tragedy, Governor Newsome lifts the quarantines and champions a community-centered approach that calls for citizens and government officials to work together to fight the outbreak.

The movie also portrays the pandemic from the perspective of everyday citizens. Two particularly important characters are New Yorkers Alma Ansen, a nurse at a local hospital, and her husband Curtis Ansen, a National Guardsman. The couple tries to balance their desire to stay healthy against their professional obligations, which regularly expose them to infected individuals. Despite the risk, both remain committed to their work for the majority of the movie. However, Alma quits her job after becoming pregnant. The movie also follows Ed Connelly's family in the weeks following his death. Ed's wife, Lauren Connelly, struggles to cope with a sick child, secure food and water for her family, and deal with the day-to-day demands of raising a teenage girl. Lauren eventually emerges as a heroic figure, spearheading a "neighborhood watch program" that requires friends and neighbors to regularly check on one another and care for the elderly. Her efforts eventually compel Governor Newsome to establish a relief fund in Ed Connelly's name.

With the pandemic at a fever pitch, U.S. government officials learn the French government has created a vaccine. Despite initially agreeing to circulate the vaccine worldwide, the French decreed all French citizens would be inoculated before they would share the vaccine with other countries. However, the French eventually concede to international pressure, allowing the vaccine to be distributed to the U.S. As the movie nears its end, the U.S. government initiates a program to prepare for the implementation of a nationwide vaccination program, marking a distinctly "optimistic" turn in the film. A brief vignette showing images of citizens resuming normal activities, implying Americans have weathered the H5N1 storm, accompanies the scene depicting the vaccination distribution campaign. However, *Fatal Contact* concludes on an alarming note. A global disease surveillance report indicates a newly mutated H5N1 strain has emerged in Angola, Africa where the virus had been circulating among immune compromised individuals. Dr. Varnack is deployed to the scene of the suspected outbreak and discovers that an entire village has been decimated by the mutated strain. The movie closes by showing a large flock of infected geese migrating out of Angola.

Contagion, 2011

Steven Soderbergh's 2011 film *Contagion* follows the spread of the Meningoencephalitis Virus One (MEV-1), a novel and deadly respiratory illness that originated in Hong Kong. Similar to *Fatal Contact*, *Contagion* traces a number of distinct but intersecting plot lines, including a CDC scientist's attempt to develop an effective vaccine, a man's struggle to cope with the loss of his wife and protect his daughter, a World Health Organization (WHO) worker's quest to find the source of the virus, a high ranking CDC official's efforts to maintain public order at the state and local level, and a blogger's attempt to cash in on public fear by promoting an untested homeopathic remedy.

The movie is structured to trace the evolution of the pandemic over a period of days, yet another similarity with *Fatal Contact*. It begins on the second day of the outbreak by following a number of infected individuals as they go about their daily lives. All of the individuals recently contracted the virus in Hong Kong, all of them grow sick and eventually die, and many of them are foreign born citizens travelling home from Hong Kong. One character, Beth Emhoff, is particularly important. Beth is "patient zero," the first individual to contract the virus. She is also responsible for bringing the disease back to the U.S. During her trip home, Beth makes a brief stop in Chicago, where she engages in sexual intercourse with her lover. She then returns to her husband and young son in Minneapolis. Within days, her condition worsens and she eventually dies from seizures. Her son later dies from MEV-1 as well. Her husband, Mitch, is exposed to the virus but does not become ill. He is briefly quarantined before reuniting with his

daughter from another marriage. The movie follows Mitch and his daughter's efforts to survive the disease outbreak, documenting everything from their attempts to avoid exposure to their painstaking wait to obtain a vaccine.

By days three and four, MEV-1 has spread across Minnesota and parts of Illinois. Representatives from the Department of Homeland Security (DHS) initially fear the outbreak, which coincided with Thanksgiving, is a biological weapon attack. They convene a special meeting with Dr. Ellis Cheever, a high ranking official at the CDC. Dr. Cheever responds by sending Dr. Erin Mears, an Epidemic Intelligence Surveillance Officer, to Minnesota to investigate the outbreak. Despite encountering immediate opposition from state officials who are unwilling to rile public concern and spend money on costly response efforts, Dr. Mears successfully establishes a number of quarantine stations throughout the state. However, she is infected by MEV-1 and eventually dies in one of Minnesota's quarantine sites. By this juncture, the outbreak has reached pandemic proportions, sickening millions of people worldwide.

Around the time Dr. Mears is dispatched to Minnesota, Dr. Leonara Orantes of the WHO is sent to Hong Kong to identify the source of the virus. Although she succeeds in tracing the virus to its origin, a casino on the outskirts of Hong Kong, a government official kidnaps her and declares that she will be held ransom until the WHO provides his village with doses of an MEV-1 vaccine. Dr. Orantes spends much of the movie living in the official's village, which was devastated by the disease. She is released after WHO officials dupe the bureaucrat by giving him a fake vaccine. Dr. Orantes returns to the village after learning the vaccine was not real.

The movie weaves yet another important storyline around a conspiracy theorist named Alan Krumwiede. A popular blogger with thousands of followers, Krumwiede alleges that the government is withholding a cure, which he believes is a homeopathic remedy called "forsythia." On one occasion he posts a video claiming to be infected with MEV-1, before documenting his forsythia treatment regime. Days later he is miraculously cured. Demand for the forsythia explodes and desperate consumers loot local pharmacies looking for the drug. We later learn Krumwiede is deceiving consumers in order to bolster forsythia sales on behalf of investors, who are providing him with kickbacks. He is eventually arrested and charged with exchange fraud.

With these various storylines circulating, the bulk of the movie depicts state and federal response efforts, attempts to develop and later distribute a vaccine, and the social fallout resulting from the pandemic. Millions of people are sickened and killed by the virus, causing a virtual shut down of global economies and travel. Lawlessness takes hold across the country, as many Americans are unable to find food and protect their homes in face of pervasive emergency personnel absenteeism. Curfews are implemented in all major cities. Congress works remotely and the President is evacuated. Eventually, however, a CDC worker who courageously tests a serum on herself develops a vaccine. Distribution of the MEV-1 is slow and, due to unprecedented nationwide demand, determined by a government run lottery system.

The movie concludes by returning to "day one" of the outbreak, where we learn the virus was actually the result of a mutation or "mixing" between a bat virus and pig virus. The infected pig was later slaughtered, shipped, and served as food at the same casino attended by Beth Emhoff (patient zero). Emhoff contracted the virus not by ingesting the pig, but by shaking hands with a chef who had been handling the sickened creature. Over the course of the evening, she spreads the disease by touching various objects throughout the casino.

Depictions of Disease in the Biothriller Genre

As indicated above, *Outbreak*, *Fatal Contact*, and *Contagion* are all either loosely or explicitly based on actual diseases. The Motaba virus in *Outbreak* is based on Ebola, an extraordinarily deadly virus that has cropped-up, primarily in Africa, on several occasions. (The film uses actual images of Ebola to depict the Motaba virus.) *Contagion's* MEV-1 virus is modeled after both Severe Acute Respiratory Syndrome (SARS), a highly lethal respiratory virus that spread from Hong Kong to parts of Asia, North America,

and Europe in 2003-2004, as well as the novel strains of avian and swine influenza. And the H5N1 virus in *Fatal Contact* is not an imagined but a real virus that continues to circulate in parts of Southeast Asia.

Given that these movies derive their inspiration from real diseases, one would expect them to provide relatively accurate portrayals of risks associated with contemporary emerging diseases as well as the process of disease transmission. For the most part, this assumption seems to hold. All of the viruses are highly lethal, causing symptoms similar to the real diseases they're modeled after. In *Fatal Contact*, an unnamed character went so far as to state an H5N1 pandemic would be like "Hurricane Katrina hitting every city and every state at the same time." Like the recent pandemic influenza viruses and SARS, the fictional MEV-1 and H5N1 viruses tend to settle in the lungs and manifest symptoms after 48-to-60 hours. *Outbreak's* Motaba virus, like Ebola, causes hemorrhagic fever, which is typically characterized by abnormal spikes in body temperature, bleeding disorders, and eventual death. Motaba is slightly more sensationalized relative to the other viruses, as it has a death rate of 100%, multiplies in less than five hours, and has an incubation period of less than 24-hours. Such characteristics are extreme by any measure.

Novel viruses typically originate in animals and derive their lethality from the fact that they have yet to circulate in human populations. All of the viruses depicted in the three films originated in animals before infecting a human host—Motaba originated in monkeys, MEV-1 was a combination of bat and swine viruses, and H5N1 in birds. In order for a novel virus to become a pandemic virus, a mutation must occur allowing the virus to readily spread among human populations. *Fatal Contact* does a particularly good job explaining the importance of these genetic changes. In a meeting with state and local leaders, Dr. Varnack remarked: "We have been tracking the H5N1 flu virus since 1996. Now over that time less than 100 people have died and most of them handled poultry on a daily basis. Two weeks ago everything changed. The H5 virus mutated and is now transmissible from human-to-human." The movie explains yet another mechanism for disease mutation. During her trip to Angola to investigate a potential new strain, Dr. Varnack notes that outbreaks in populations with chronic diseases and weakened immune systems can result in new viral strains because "their bodies can't offer much resistance which allow the H5 to thrive and mutate even further."

Outbreak also demonstrates the importance of disease mutations. In the "movie theater scene," one of Motaba's earliest victims, a lab technician, is suddenly overcome with a fever, chills, and coughing while attending a crowded theater. At this moment, he sneezes and the camera pans in on the mucous expelled from his mouth and nose as it dissipates across the theater and infects other patrons. This scene is intended to signify the virus's mutation into an airborne strain, a critical turning point in the movie.

Virtually all of the films also call attention to the various forms of disease transmission. In *Fatal Contact*, possible transmissions from an infected person to a healthy person are accompanied by ominous music or, in certain cases, camera "close-ups" focusing on the possible source or site of infection—a dirty napkin, a kiss, discarded food. *Contagion* and *Outbreak* employ similar filmmaking techniques to underscore disease transmissions, zooming in on infected materials and other disease vectors. Throughout all of these films public health officials consistently remind citizens (and by default viewers) that regularly washing their hands is one of the best defenses against disease.

All of these details provide important lessons about disease transmission and risk. Of the three films, *Contagion* unquestionably received the most praise for its depiction of disease transmission. Arthur Kellerman, an emergency medicine physician and director of Rand Health in Santa Monica, said *Contagion* "did a wonderful job of dramatizing interspecies transmission and recombination in an animal cooking vessel — which is often a pig — and then making the jump to humans" (Brown 2011, para. 8). Paul Offit, a vaccine coinventor at the Philadelphia Children's Hospital, added: "Typically when movies take on science, they tend to sacrifice the science in favor of drama. That wasn't true here" (Offit 2011, para. 2). "*Contagion* is an excellent movie in that it is willing to allow science to prevail over drama. It is quite well done, so I recommend it," Offit told Medscape, an online resource for health professionals and physicians (para. 9).

This is not to say the films are without critics. *Outbreak* received some particularly harsh criticism for over-sensationalizing the Motaba virus's lethality. Professor Samantha Elliot of St. Mary's College of Maryland questioned *Outbreak's* depiction of the disease mutation process. Elliot argued the Motaba virus, which shares marked similarities to Ebola, is unlikely to mutate into an airborne strain because viruses tend to attack very specific cells in the body. Specifically, she notes that prior to its mutation Motaba did not manifest as a respiratory infection. As such, it's highly unlikely that Motaba would suddenly attack the respiratory system, the hallmark of most viruses that transmit via air (Elliot 2009). Michael Osterholm, associate director of the U.S. Department of Homeland Security's National Center for Food Protection and Defense, criticized *Fatal Contact's* depiction of disease transmission, noting that the main pathway of transmission for a pandemic virus will probably be coughing and sneezing, rather than the types of hand-to-hand transmission highlighted at the beginning of the film (Ruttiman 2006). And even the much-applauded *Contagion* was criticized. Alice Huang, a virologist at Caltech, stated: "I found it a little hard to believe that the incubation period and the disease manifestation would be so quick. It was virtually within 24 hours. Several days would be more typical" (Brown 2011, para. 5). Dr. Peter Katona, an infectious disease expert at UCLA and former member of the CDC's Epidemic Intelligence Service, added: "Assuming the vaccine would work right away was a little misleading. Vaccines take a bit of time to kick in—a few days or a week" (para. 11).

Biothrillers also draw attention to the social and institutional factors that enable the emergence and spread of novel diseases. One particularly notable theme depicts the delicate relationship between humankind and nature. This theme figures prominently in *Outbreak*. Indeed, the movie opens with a quote by Dr. Joshua Lederberg, a biologist and Nobel laureate, that reads: "The single biggest threat to man's continued dominance on the planet is the virus." The movie later connects the appearance of the Motaba virus with deforestation practices in Zaire. In one scene, a priest, who remained isolated as the virus ripped through a small African village, deems the disease retribution from the gods who were angered by the greedy loggers. The dignified priest seems to represent a mouthpiece for the environment, allowing *Outbreak* to levy a harsh critique against deforestation practices.

Industrial foresting and food production are demonized in *Contagion* as well. In this film, logging in Hong Kong displaces an infected bat. The bat relocates to an industrial farm where it drops a partially eaten banana into an animal-pen where it is consumed by a pig. A cook, who earlier in the evening handled the infected pig carcass, spreads the disease to Beth Emhoff—patient zero. *Fatal Contact* draws attention to not only industrialized food practices, but also the dangers of unregulated open-air food markets, like those found in Guangdong. Highlighting all of these potential dangers seems especially relevant in light of the EcoHealth Alliance survey, which identified a dearth in citizen knowledge about the interrelationship between emerging diseases and environmental practices (EcoHealth Alliance 2011).

A second important theme calls attention to globalization's public health implications. Most public health practitioners and scholars recognize that contemporary society's heightened state of interconnectedness helps facilitate the spread of germs. A 2002 study by the CDC eloquently summarized the complexities of public health in this latest era of globalization. The CDC writes:

It is not possible to adequately protect the health of our nation without addressing infectious disease problems that occur elsewhere in the world. In an age of expanding air travel and international trade, infectious microbes are transported across borders every day, carried by infected people, animals, and insects, and contained within commercial shipments of contaminated food. "Old" diseases such as malaria, measles, and food-borne illnesses are endemic in many parts of the globe, and new diseases such as acquired immunodeficiency syndrome (AIDS; caused by the human immunodeficiency virus (HIV))—as well as new forms of old diseases such as multidrug-resistant tuberculosis (TB)—can emerge in one region and spread throughout the world (CDC 2002, p.6).

While globalization is by no means a new concept, 1995's *Outbreak*, which offers a detailed analysis of the global dimensions of public health, represented something of a forerunner within the biothriller

genre. *Outbreak* depicts a markedly interconnected world where germs can spread from the foothills of Africa to a small-town in California in less than 48 hours. *Outbreak* also implies globalization engenders ethical responsibilities. When advocating for the bombing of Cedar Creek, Major General McClintock, perversely compelled the President to “Be compassionate, but be compassionate globally,” thus implying a moral obligation to prevent the disease from spreading internationally.

Produced more than a decade after *Outbreak*, *Contagion* and *Fatal Contact* also call attention to the ways in which interconnectedness contributes to the spread of disease. Both films demonstrate the breakneck pace at which viruses can spread to all corners of the globe, from Hong Kong to Angola to England to the U.S. Both open by showing infected Americans travelling from parts of Asia, spreading H5N1 or MEV-1 viruses along their travels. *Fatal Contact* is also careful to note that humans aren’t the only global travelers capable of spreading disease, as the movie begins and ends by depicting a large flock of presumably infected geese migrating from a diseased region to a new locality. Like *Outbreak*, *Fatal Contact* also weighs-in on the ethics of global public health, noting that marginalized populations contribute to the evolution of disease, as evidenced in the Angola outbreak described above. Finally, *Contagion* and *Fatal Contact* also introduce the variety of interactions between domestic actors, like the CDC, and global actors, like the WHO.

Thus, as hypothesized, the three biothrillers do in fact serve a valuable function in terms of educating the public about emerging diseases. Although they are far from perfect, all of the films provide a *basic* overview of the science of emerging diseases, including their lethality, the mutation process, and the various avenues of transmission. Equally important, the films draw attention to the social and institutional factors that contribute to the emergence and spread of these diseases. In the following section, I turn my attention to depictions of public health and government preparedness.

Depictions of Public Health and Preparedness in the Biothriller Genre

By and large, *Outbreak*, *Contagion*, and *Fatal Contact* succeeded in providing an accurate depiction of emerging diseases and their transmission. Unfortunately, the same cannot be said about their depictions of preparedness. Considerable variation was observed in terms of the accuracy of the three films’ accounts of the American public health system. Specifically, whereas *Contagion* and *Fatal Contact* provide a relatively robust analysis of public health and preparedness, considerable flaws mar *Outbreak*.

Once again, certain themes seem to resonate across the films. All of the films correctly depict vaccine acquisition as a hallmark of preparedness, although they differ dramatically in terms of the accuracy of their portrayal of the vaccine *development* process. The bulk of *Outbreak*’s plot centers on Colonel Daniels’s attempts to capture the African monkey responsible for bringing Motaba to the U.S. He succeeds and the so-called “ramp up” time between deriving an effective antibody and mass-producing a vaccine is absurdly fast. Within 24-hours of capturing the animal, Colonel Daniels has rendered enough vaccine to inoculate the entire town of Cedar Creek. Vaccine production is in fact a laborious process that often takes months to complete.

Contrast this misleading depiction against *Contagion* and *Fatal Contact*’s description of the vaccine development process. *Contagion*’s MEV-1 vaccine was the product of extensive work and repeated CDC testing. Nor did it come from a lone scientist, but required a team of government scientists often working in conjunction with academics. What is more, the time between the actual development of a vaccine and mass human consumption was considerable. This process was so slow and demand was so high that the U.S. government ultimately implemented a lottery system. *Fatal Contact* was even more explicit in explaining the difficulties associated with vaccine development. During a briefing of state officials on the status of the H5N1 outbreak, Dr. Varnack explains that vaccine development can often take months “because every single strain of influenza is unique and so you can’t develop a vaccine until that particular strain comes into existence.”

Yet, the most dramatic difference between the films is derived from the fact that *Outbreak* provides an overly skeptical depiction of government. *Outbreak* focuses almost entirely on the “militarization” of

public health as opposed to preparedness. One particular exchange between Brigadier General Ford and Major General McIntock boldly illustrates this theme:

Brigadier General Ford: 1918. Remember your history Donnie? The great influenza pandemic? Circled the globe in nine months. 25 million people [died].

Major General McIntock: My father lost three brothers in that, so?

Brigadier General Ford: What if there were men who could have stopped it, only they didn't? How do you think history would have judged such men?

Major General McIntock: Oh baloney. FDR stops Stillwell going into Indochina. He caused the Vietnam War. What did history say about him? Truman dropped the bomb on the Japanese, saved hundreds of thousands of American lives. Now your revisionist historians are saying he just dropped that bomb to scare the Russians. Come on. Give me a break.

Brigadier General Ford: Those men were at war, Donnie. We're not.

Major General McIntock: We are at war Billy. Everybody is at war. I have a presidential green light [to bomb Cedar Creek] and I am going forward.

Brigadier General Ford: Donnie these people are Americans.

Major General McIntock: Twenty six hundred dead or dying Americans. If that bug gets out of there, Billy, 160 million Americans will be dead or dying. Those people are casualties of war Billy. I would give them all a medal if I could but they are casualties of war.

Exchanges like these dominate *Outbreak* and, as a point of fact, the protagonist, Colonel Daniels, spends most of the movie working to *overcome* the barriers imposed by America's public health institutions.

Outbreak's cynicism is not totally unwarranted. Public health, like all areas of American government, is subject to bureaucratic infighting. What is more, charges that the government wants to militarize public health are in fact commonplace. Indeed, when the Bush Administration proposed additional funding for the building of new BSL-4 biocontainment laboratories, which typically study the world's most lethal germs, anti-war and environmental justice advocates branded the program as an overt attempt to bolster the U.S.'s biological weapons arsenal (Fulton 2005).

The real flaw is not that *Outbreak* introduces these themes, but that it does so at the expense of a discussion of preparedness activities. Disease surveillance, vaccine development, even the specific dynamics of quarantine efforts—core public health preparedness practices—are neglected or, at best, conveyed as blundering government failures. In this regard, *Outbreak* fails to enlighten citizens about the preparedness process and public health in general. One could go so far as to argue its overt skepticism of government serves to perpetuate the perceived divide between medical elites and the general public. According to *Outbreak* government is working against citizens, not for or with them. While this may be true in isolated cases, it is an inaccurate depiction of the field.

Instead of fixating on negative forces within government, *Fatal Contact* and *Contagion* present a much more robust depiction of public health and preparedness. One could even argue *Contagion's* Alan Krumwiede, the manipulative and misleading conspiracy theorist, represents an implicit critique of those

who construe government as a purely corrupt or negative force. This is not to say these films give government a free pass. Interestingly, state government officials are conveyed as particularly obstructionist characters. In *Fatal Contact* Governor Newsome overtly rejects accepted public health conventions, mandating quarantines despite Dr. Varnack's call for a more tempered approach. In *Contagion* Minnesota state officials quarrel with the CDC over budgetary issues and communications strategies.

However, these themes do not dominate either film, in turn resulting in a comprehensive depiction of the preparedness cycle. By following the evolution of the MEV-1 and H5N1 outbreaks over a period of days or weeks, *Fatal Contact* and *Contagion* provide an account of the process of disease surveillance. In *Fatal Contact*, Dr. Varnack is regularly deployed to Guangdong and other parts of the world to investigate new outbreaks or mutations. *Contagion*'s Dr. Mears, who is deployed to Minnesota, and Dr. Orantes, who is deployed to Hong Kong, also engaged in disease surveillance. And as these pandemics evolved, government activities followed the preparedness cycle through each stage, from readying quarantine centers to implementing emergency response protocols to developing and distributing a vaccine. In sum, the preparedness and response process imagined in these films largely mirrors standard public health practice.

Contagion is also rife with descriptions of important public health practices. In one of the more notable scenes, Dr. Mears explains the R0 concept—pronounced “r-naught”—to Minnesota officials. R0, which is used to model the relative rate at which a disease is expected to spread, is central to the practice of epidemiology. Viewers with no background in public health stand to gain from this scene, as Dr. Mears carefully explains R0 and even uses whiteboard to illustrate its practical application. Commenting on this scene, *Contagion*'s writer Scott Burns later told *CNN Health* that he “wanted people to understand R0. That one scene is really a science and math lesson, but people seem to get it” (Hellerman 2011).

The most impressive feature of *Contagion* and *Fatal Contact* is their depiction of the politics of public health and disease preparedness. Both films explicitly consider the administrative challenges associated with a federalist system like the U.S. Contrary to *Outbreak*'s depiction of a unitary public health system wherein the national government has unfettered authority to impose quarantines and suspend citizens' rights, America's public health system is highly decentralized and most public health functions are left to the states. In fact, the national government's functions are largely limited to providing funding and technical support. This amounts to considerable variations across states. *Contagion* boldly illustrates the importance of federalism in the important “television interview” scene. In this scene, both Alan Krumwiede and Dr. Cheever appear on Dr. Sanjay Gupta's television show to discuss the MEV-1 outbreak. When asked to provide an estimate of the number of cases and deaths nationwide, Dr. Cheever remarks that it is impossible to provide a clear estimate because “There are fifty different states in this country which means there are fifty different health departments followed by fifty different protocols.”

Fatal Contact provides an even more robust depiction of the importance of federalism. Similar to *Contagion*, federal officials in *Fatal Contact* concede that many important response decisions “are best left to the respective states.” The implications of this fragmented system are clearly illustrated in Governor Newsome's response to the pandemic. Much to the dismay of CDC officials, Governor Newsome is able to exert considerable influence over preparedness and disaster response policy at the state level. This authority technically falls under the purview of state government police powers. *Fatal Contact* delves into the dynamics of federalism on other occasions as well. Throughout the movie large “executive meetings” between governors are convened, with representatives from all fifty states appearing in-person or, in the midst of the pandemic, remotely.

Perhaps the most surprising feature of *Fatal Contact* is its occasional references to a number of rather technical aspects of state public health policymaking. For example, the movie includes a brief scene wherein Federal Emergency Management Administration (FEMA) officials request that state officials activate their “comprehensive pandemic influenza plans.” This reference to pandemic influenza plans denotes an actual state and federal initiative that asked states to establish plans outlining how they would respond to a pandemic influenza. These planning efforts, which received federal government funding and

guidance, codified a number of important pandemic preparedness and response strategies, including leadership and coordination, vaccine management and distribution, antiviral drug management, surveillance and laboratory activities, and communications (Lister 2007). While not a major feature in the movie, the preparedness plan reflects *Fatal Contact*'s close attention to detail with regard to the dynamics of federalism.

The importance of managing credibility is yet another political lesson introduced in *Contagion*. Throughout the movie, the CDC and other government agencies struggle to alert citizens of the dangers of MEV-1 without instilling a state of fear. *Contagion* cites real public health events to illustrate the difficulties government faces in striking this balance. In the movie, CDC's credibility was damaged by a perceived overreaction to the 2009 swine flu pandemic. Despite being a novel virus, the 2009 iteration of the swine flu was largely seen as a mild health event. The virus sickened roughly 100,000, killing nearly 3,500 Americans. The movie also referenced the 1976 swine flu debacle. In response to an outbreak of swine flu at an army base, Ford ordered mandatory vaccinations. However, the swine flu virus never came to fruition and nearly 25 Americans died from the vaccine alone.

Like their fictional counterparts in *Contagion*, contemporary public health officials also grapple with the perceived credibility issues created by events like the 1976 swine flu affair. For example, the 1976 event was frequently referenced during the debate about how best to respond to the H5N1 bird flu in the late 1990s and early 2000s. A deadly but largely isolated virus, global health practitioners feared the bird flu might mutate into an airborne strain. Faced with this uncertainty about the prospects of a bird flu pandemic, Lawrence Altman of *The New York Times* commented that the "specter" of the 1976 swine flu debacle "haunts federal health officials" as they try to cope with uncertainty surrounding bird influenza (1997). In the case of *Contagion*, the CDC and other public health practitioners pursued an aggressive preparedness campaign, despite the uncertainties associated with MEV-1. Commenting on the potential for overreacting, Ellis Cheever indicated "I would rather the news story be we overreacted, than many people lost lives because we didn't do enough."

Thus, contrary to my original expectation, biothrillers can and often do provide accurate depictions of public health and the preparedness process. Both *Fatal Contact* and *Contagion* succeeded in illustrating a variety of core public health practices, including surveillance activities, vaccine development and distribution, and the R0 concept. They also offered a surprisingly robust depiction of the politics of public health. *Outbreak* failed to cover these important topics, instead focusing on the militarization of public health.

The Biothriller as a Vehicle for Citizen Empowerment

This paper set out to examine the extent to which biothriller films educate citizens about emerging diseases and preparedness while empowering them to become active participants in the provision of public health services. Findings from this study are surprisingly mixed. On the one hand, the above analysis confirmed my expectation that *Outbreak*, *Fatal Contact*, and *Contagion* would provide an accurate and detailed depiction of emerging diseases, a testament to the fact that all three films were loosely or explicitly based on real viruses. *Outbreak*, *Fatal Contact*, and *Contagion* expertly delved into important topics, like the disease transmission process, viral mutations, and death rates. Additionally, the films addressed the ability of social and institutional factors, like deforestation, industrialized food production, and global interconnectedness, to contribute to the spread of novel viruses. On the other hand, contrary to my second hypothesis, two out of the three films—*Fatal Contact* and *Contagion*—offered robust and detailed illustrations of preparedness and public health. Not only do these films present a strong overview of some American public health institutions and norms, but they also elucidate a variety of complex preparedness and public health practices, like R0, surveillance, and the relationship between state and national public health institutions.

What explains these surprising results? Why did *Fatal Contact* and *Contagion* succeed, whereas *Outbreak* seems to have failed? In his 1993 text, political scientist Richard Rose describes a process known as "lesson drawing" in public policy. Rose demonstrates the variety of ways in which

policymakers can learn across space and time, a skill that allows them to make improvements on current policy proposals based on lessons learned at earlier points in time or in different geographic locations (Rose 1993). The findings described herein imply biothriller producers and writers benefited from lesson drawing across time. As evidenced throughout, many of the same themes and devices are recycled from film-to-film, allowing writers to recalibrate these narratives relative to their own story lines and, quite possibly, in response to the shortcomings of earlier works. Indeed, a simple Google search of the terms “outbreak contagion movies” reveals scores of articles, reviews, and blogs discussing the extent to which *Contagion* borrowed, expanded upon, and perhaps even improved upon the “formula” developed by *Outbreak* several years prior.¹

Contagion and *Fatal Contact* also benefited from the fact that the diseases they depicted were modeled after fairly common or prevalent public health events. Whereas pandemic influenza has, by its very nature, far reaching global implications, Ebola outbreaks are generally very localized—not global—events. Not surprisingly, then, pandemic influenza typically garners far more governmental and “mainstream” media attention than Ebola. Indeed, by 2000, pandemic influenza was widely considered one of the most significant threats to global public health. The 2003 H5N1 avian influenza outbreak in Southeast Asia prompted countries to launch sweeping pandemic influenza preparedness plans. These programs were activated in 2009 in the face of the H1N1 swine flu pandemic. Scores of government, media, academic, and even historical documents describing probable and actual pandemic response plans were readily available by the time *Fatal Contact* and *Contagion* were released in 2006 and 2011 respectively.² *Contagion* producer Steven Soderbergh even employed public health experts and virologists in order to ensure accuracy (Lim 2011). Given the novelty of Ebola outbreaks, *Outbreak* simply could not draw from the sort of robust knowledge base available to the other films.

There is ample reason to believe that biothrillers can in fact serve as a venue for educating citizens. To do so, producers and writers alike must strike a delicate balance between entertainment value and reality. The brief “learning vignettes” integrated throughout *Contagion* and *Fatal Contact* offer valuable opportunities to inform citizens about important public health practices and norms. Although uptake of this information will vary depending on the viewer, the contemporary biothriller seems especially adept at presenting a proverbial “Cliff’s Notes” version of public health information, boiler plating knowledge down to easily understandable and digestible parts.

Of course, these learning experiences cannot come at the expense of entertainment value. In terms of sheer education value, *Fatal Contact* trumps both *Outbreak* and *Contagion*. *Fatal Contact* offers a noticeably rich overview of various aspects of the preparedness cycle, provides a great deal of information on the disease mutation and transmission process, and touches on the complex politics of a decentralized governance structure. However, it pales in comparison to the other two films in terms of its budget size, cast, and overall production quality. In turn, these learning opportunities feel slightly contrived at times, abruptly intruding on the normal flow of character interactions. Despite offering comparatively fewer learning opportunities, *Contagion*’s superior production quality accommodates a seamless transition in and out of these learning scenes, which ultimately makes for a far more entertaining

¹ A number of the more interesting posts include anonymous blogger Ali’s “Contagion: Steven Soderbergh remade *Outbreak* minus the monkey,” (<http://www.theshiznit.co.uk/trailer/contagion-steven-soderbergh-remade-outbreak-minus-the-monkey.php>), Mike Eisenberg’s “Trailer Mashup Shows *Contagion* Looks A Lot Like *Outbreak*” (<http://screenrant.com/contagion-outbreak-trailer-mikee-123493/>), and Bruce Zabel’s “Going Viral: *Contagion* (2011) vs. *Outbreak* (1995)” (<http://www.moviesmackdown.com/2011/09/contagion-vs-outbreak.html>).

² See, for example, John Barry’s 2004 book *The Great Influenza: The Epic Story of the Deadliest Plague in History*, which provides a detailed account of the response efforts initiated in the face of the 1918 Spanish flu outbreak. The *National Strategy for Pandemic Influenza*, the U.S. Department of Health and Human Service’s pandemic plan, and the Department of Defense’s (DoD) *Pandemic Influenza Preparation and Response Planning Guidance* are but a sampling of the various governmental documents describing preparedness and response strategies (Lister 2005).

experience. If the goal is to reach as many citizens as possible, then the overall *quality* of these films is perhaps just as important as the *quantity* of teachable moments.

But empowering citizens denotes something far greater than simply the diffusion of knowledge. Empowerment allows citizens to see themselves as active participants in public health, not passive consumers of public or privately administered services. An empowered citizenry will view public health as a participatory, not hierarchical or authoritative, process. Information and entertainment are therefore essential but not entirely sufficient ingredients for empowerment. Films must also instill a sense of civic self-worth, encouraging viewers to mobilize in the provision of the public's health.

Empowerment is obviously a complex and dynamic process. While a variety of creative mechanisms and techniques can help achieve this goal, one of the more important lessons that can be deduced from this paper centers on the ways in which biothrillers portray the fictional "citizen." A 2012 editorial in *The Vigilant Citizen*, a blog examining the use of hidden rhetoric and persuasion in popular forms of entertainment, marshaled a stinging critique of *Contagion*. The unnamed blogger charged *Contagion* with serving to perpetuate a well-entrenched narrative within the biothriller genre, which portrays citizens as helpless victims incapable of navigating the trials and tribulations of large-scale disasters. This narrative further depicts government and other authority figures as having an innate leadership ability that allows them to take charge in the face of crises and rebuild tattered communities. The result of the so-called "infantilization" of citizens is that viewers—the vast majority of whom likely identify with the citizens portrayed in these films—assume they should blindly acquiesce to the decisions of authoritarian figures in times of crises, even if such decisions result in the imposition of marshal law, suspension of civil rights, forced vaccination programs, and dissolution of elected government (The Vigilant Citizen 2012).

Despite their strengths in other areas, *Contagion* and *Outbreak*—knowingly or unknowingly—seem to conform to this pattern of infantilization. In *Outbreak*, citizens are reduced to passive victims and virtually everyone in a position of power is either a doctor or government official. Although *Contagion* is not completely devoid of strong "citizen" characters, none of these individuals are participants in the public health process. To be sure, Beth Emhoff's husband Mitch takes great pains to protect his daughter and hardly constitutes a weak character. But although he is a survivor and caretaker, Mitch is not an active partaker in the public health process. He remains, in other words, at the whim of government officials.

Fatal Contact seems to provide an example to the contrary. Figures of authority remain central characters in the film, leading the charge against the H5N1 epidemic. However, *Fatal Contact* also presents a citizen leader who launches her own preparedness and response efforts, Lauren Connelly. After spending part of the film incapacitated by grief, Lauren, the wife of the patient-zero Ed Connelly, emerges as a local leader. She organizes a fairly comprehensive response effort, allowing neighbors to support one another through this time of crisis. Equally impressive, the main figures of authority in the film, most notably Dr. Varnack and later Governor Newsome, support and promote this kind of engaged citizen participation, instead of simply herding people into forced quarantines and restricting their personal autonomy. In other words, public health is portrayed as both a "bottom-up" and "top-down" endeavor in that all levels of actors serve a vital function in the preparedness cycle. Thus, aside from education and entertainment, empowerment demands that biothrillers depict a participatory public health process wherein citizens and leaders alike are prepared for and respond to disease events.

Conclusion

The biothriller is a viable venue for empowering citizens and democratizing public health and preparedness. To empower citizens, biothrillers must meet three primary criteria. First, they must provide accurate and robust information about the transmission and risks of emerging diseases while highlighting the core functions of the American public health system and preparedness. Second, although the dissemination of information is critical, it cannot come at the expense of entertainment value. Indeed, without entertainment value, the biothriller is tantamount to a public service announcement. Third, the biothriller must demonstrate an empowered citizenry capable of participating in the actual practice of

public health. *Outbreak*, *Fatal Contact*, and *Contagion* vary in terms of the extent to which they meet these core competencies, although none of the films successfully melds all three components.

Famed Canadian scholar Marshall McLuhan once remarked, “Anyone who tries to make a distinction between education and entertainment doesn’t know the first thing about either” (Logan 2012, p.2). In the more than 45 years that have passed since McLuhan uttered those words, the entertainment industry has continued to pursue this end, producing a wealth of educational movies, books, and other forms of popular media. In this era of pervasive distrust of government, social alienation, and political polarization, the entertainment industry is well positioned to perform a higher civic function—it can help empower Americans. Achieving this goal will require that writers and producers confront and challenge entrenched narratives about the role of government and the capacity of individuals to produce change. While it still has a long way to go in fulfilling this lofty calling, the biothriller genre is well-equipped to help lead the charge.

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