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## Sample Paper 1

### Physics of Parallel Universes

Kelsey Schodowski, Spring 2008

Parallel universes are objects found in fiction and fantasies, where Alice falls down the rabbit-hole and into an alternate world, having tea with the Mad Hatter and taking advice from a caterpillar. Scientists wanted nothing to do with these strange worlds that seemed to have jumped off the pages of a children's story book, so the idea of multiple dimensions sat untouched in the back of a laboratory filing cabinet until one discovery made the theory impossible to ignore. This discovery came in the form of a subatomic particle, with a mass as small as  $9.10938215 \times 10^{-31}$  kg, the electron. When scientists tried to determine the exact position of an electron in an atom at any point in time, the task was impossible. The only plausible explanation- particles have the ability to occupy more than one place at a time. They don't exist solely in our universe, but "flit into existence in other universes, too and there are an infinite number of these parallel universes, all of them slightly different" (Parallel Universes). Each one of these parallel universes illustrates history following different outcomes including one where Britain won the Revolutionary War or another where Hitler was accepted into art school and didn't continue on the terrible course that led him to become the cruel dictator of Germany. In one alternate universe you are not alive. These worlds are stacked immeasurably close, but imperceptible on top of our own Universe. However, the acceptance of the study of parallel universes and that branch of particle physics did not happen over night; it took scientists decades of research and meticulous tweaking of ideas to finally develop a conceivable explanation as to the existence of parallel worlds and multiple dimensions that was not ridiculed by the scientific community.

Albert Einstein was one of the first scientists to pioneer the development of a "theory of everything" that would explain and unite all the phenomena of the universe. And although Einstein never achieved his dream, his discoveries provided the foundation for the standard model of particle physics called the Quantum Field Theory. This theory is successful in explaining three of the four known forces of nature: electromagnetism, strong nuclear forces, and weak nuclear forces (M- theory). Electromagnetic force is found in many varieties including light, magnetic, and electric energy. It powers the basic, but essential appliances of our everyday life such as televisions, radios, microwaves, computers, and even lasers. Strong nuclear force is the fuel that provides energy to stars and our sun, and without this force all life on earth would be destroyed; on the other hand, strong nuclear force also supplies the energy to split atoms, creating the deadly Hydrogen bomb. Weak nuclear force is the heat emitted from radioactive decay, contributing to the eruption of volcanoes. This force is beneficial in its use to treat serious diseases, but destructive in forms created from nuclear power plants and nuclear weapons production (Kaku). Alas, the final fundamental force of nature, gravity, does not fit into the

Quantum Field Theory, as the other three so beautifully do. Gravitational force keeps our feet planted firmly on the ground, the planets and stars from flying off into deep space, and the vital air we breath trapped in our atmosphere. Without gravity our sun would explode with the force of trillions upon trillions of H-bombs. The reason gravitational force does not fit the standard particle physics model is because when the Quantum Field Theory is applied to gravity "the force between two gravitons (the particles that mediate gravitational interactions), becomes infinite and we do not know how to get rid of these infinities to get physically sensible results" (M-theory). But the addition of one more variable would prove to solve this problem.

In 1921, Theodor Kaluza unified the seemingly incompatible forces of gravity and electromagnetism with the addition of a fifth dimension, known as the Kaluza-Klein theory. Previously, scientists believed there to be only four dimensions in our universe, the first three describing the position of an object [height, length, and depth or (x,y,z) coordinates] and the fourth describing time (What is a dimension?). The Kaluza-Klein theory proposed a new definition for gravity as the vibration of light in the fifth dimension. However, it could not determine the correct number of dimensions our universe contained past the fifth, and it contained problems in relating all subatomic particles (Kaku). These technical problems made the theory useless for half a century until scientists realized they had been approaching the problem from the wrong perspective. Instead of perceiving matter as small, invisible particles, they were in fact small, invisible strings. These strings can either be open, like hair, or closed, like loops, and when the string moves throughout time it draws sheets or tubes, based on if the string is open or closed. Different vibrations and frequencies emitted by the strings create different particle types like protons and electrons with different masses and spins, comparable to the way plucking a guitar string in certain positions results in unique frequencies and notes (M-theory). The String Theory predicted the number of space and time dimensions to be precisely ten, which would accommodate all four fundamental forces of nature. But if String Theory was to be accepted, it would have to pass a nearly impossible test: explaining the biggest mystery of the Universe, the Big Bang. Scientists and cosmologists have been working tediously backwards through time to a point when the Universe was a billion years old and the first galaxies formed, when the Universe was a couple hundred thousand years old and the first atoms were formed, and even when the Universe was only a few seconds old and the first nuclei was created (Parallel Universes). Cosmologists were even on the brink of describing the events of the Universe as close as  $10^{(-35)}$  seconds after the Big Bang occurred, and it seemed as if the Big Bang and String Theory would be perfectly compatible and form the sought-after "Theory of Everything". However, there was one missing piece neither theory was able to explain: the singularity. The singularity is the exact moment when the Big Bang occurred, and yet here the laws of physics had completely collapsed, and scientists had no idea "what banged, why it banged, or what caused it to bang" (Parallel Universes). To make matters worse, scientists found five contradictory string theories which was very unfavorable when trying to create a single, precise "Theory of Everything". While many physicists were stuck in a rut trying to unite the five opposing theories, a small number of "radical" and "outcasted" scientists were focusing their attention elsewhere: the 11th dimension. Their ridiculous supergravity theory defines the universe as containing 11 dimensions and combines supersymmetry, which relates elementary particles based on their spin, with gravity (Looking for Extra Dimensions). For decades scientists argued between the existence of the widely-accepted ten dimensions and the absurd eleventh dimension. But then in a last attempt to save the String Theory from becoming completely irrelevant, they added the eleventh dimension, the exact thing they had scoffed at only years before. Suddenly, all the five conflicting theories proved to be "simply different manifestations of a more fundamental

theory" (Parallel Universes). With the eleventh dimension, scientists believed that a universal theory explaining everything in the universe was finally possible.

This new theory did not dismiss the idea of strings, but expanded upon it, explaining that all matter of the universe was connected to one immense structure, a membrane, and so came the name Membrane Theory, or M Theory. To put it visually, our entire Universe is thought to be surrounded by a bubble-like structure, but unlike normal bubbles, the membrane's surface is uneven and rippled. M-Theory revolves mainly around the existence of the eleventh dimension that is infinitely long, but has an extremely short width. Its maximum size is one trillionth of a millimeter, "meaning that it exists only one trillionth of a millimeter from every point in our three-dimensional world. It's closer than you clothes to your body and yet we can't sense it" (Parallel Universes). Physicists flooded into the 11th dimension searching for answers to previously unexplainable scientific mysteries, and every time the perfect solution came in the form of parallel universes. Some of the parallel universes were looped, others cylindrical; some had membranes similar to our own while others were simply sheets of energy. There are an infinite number of alternate universes; a fraction of them will have life, but others made be a universe of only electricity (Parallel Universes). It is very possible that in some parallel universes physics itself changes and atoms become unstable (Michio Kaku Talks Parallel Universes). Yet the credibility of the Membrane Theory depended on its ability to be able to explain what happened at the time of the Big Bang, the singularity. Unlike all the theories that came before it, M-Theory was able to provide a logical explanation of the creation of the Universe: the collision of two parallel universes. When two parallel universes collided about 14 billion years ago, the ripples on the surface of the membranes hit at different positions and times, and clumps of matter such as stars and galaxies formed as a result of the vibrations through the 11th dimension; and thus our Universe was born.

But the knowledge of parallel universes is not only important in explaining the events of the Big Bang, it may also be vital in determining the end of the Universe and helping the human race avoid destruction. The death of the Universe, known as the Big Crunch, will occur when gravitational force is reversed pulling galaxies and stars back into a primordial mass. Temperatures will increase so drastically that all matter and energy will turn into a giant fireball destroying our world, crushing all life forms. Scientists, however, believe there is some hope of avoiding this disaster. Over the course of the next billions of years, we will master the understanding of multiple dimensions and be able to travel to alternate universes. Then in the collapse of our Universe, we will tunnel into one of these parallel universes while all other planetary bodies are eradicated and "from this vantage point in hyperspace, intelligent life forms will have front row seats to the rarest of all scientific phenomena, the creation of another universe and of their new home" (Kaku). Although this situation may never occur, the M Theory is possibly applicable to other scientific phenomena such as black holes, dark matter, and parallel universes.

Unfortunately, research in exploring these multiple dimensions is extremely limited because, ultimately, they are invisible to the human eye.

However, particle physicists have succeeded in creating microscopic amounts of antimatter, a source of extreme energy which would detonate upon contact with real matter. Laboratories such as CERN and FERMI have used particle accelerators to further break down the components of atoms and are currently working on finding super-particles. But with the resources currently available to scientists, it is impossible for them to explore the tenth or eleventh dimensions, as the energy required to do so is a quadrillion times larger than the energy that can be generated by the world's largest particle accelerator, and the temperatures necessary to recreate a small universe in a laboratory is 1,000 trillion trillion degrees (Kaku). Even though we do not have the power to produce such astronomically high temperatures, scientists believe if we ever are able to acquire such energy sources,

it would be possible to create a baby universe in a laboratory. They say, in fact, that although it would expand immensely, it would not displace our own Universe. The baby Universe would split off from our own in less than a second and continue to evolve in its own space (Parallel Universes). Currently, I am working on analyzing the results and experiments conducted with particle accelerators at labs such as CERN in Switzerland and FERMI in Illinois. At CERN over 2,000 physicists are working on constructing the world's largest particle accelerator, called the Large Hadron Collider, which loops 16 miles underground and is powered by a 2,000 ton magnet larger than a house. In the accelerator, particles taken from hydrogen atoms will zoom in opposite directions close to the speed of light, then collide in the center of the detector, recreating energies near those experienced at the time of the Big Bang. I am studying the possible subatomic particles scientists hypothesize can be created from the Large Hadron Collider and the likelihood of their existence including the Higgs particle, dark matter, and small black holes. The Higgs particle is responsible for the mass of matter and keeping atoms composed. Scientists very strongly believe it exists; however, it may be difficult to find considering it has a very short lifespan before it begins to decay into other particles. Dark matter makes up a new sect of physics, Supersymmetry, which states every known particle has a heavier partner particle. Dark matter is invisible, but scientists think it makes up 20% of the universe. So the probability of finding it is less likely, but scientists believe that although they would not be able to observe the particles in the accelerator, when the particles disappear, their absence can be detected. Finally, miniature black holes are theorized to make up some of the multiple dimensions as present in the string theory. If black holes could be created they would be extremely tiny and dense and would exist for less than a trillionth of a trillionth of a second. Beneficially, when the black hole collapsed it would produce every existing particle type, but the likelihood the particle accelerator will be able to create a black hole is very slim (Kestenbaum).

Knowledge of parallel universes and their link to time travel and wormholes are our gateway to exploring other planets and galaxies light years across our Universe and possibly discovering other forms of life. While some may still consider theoretical and particle physics to be subjects studied only by "crackpots", once you begin reading about these mind boggling theories, it is impossible not to be curious about just how expansive and complex the world we inhabit is. On one hand, proving that we are only one of the infinite number of universes floating around in the multiverse, each with its own laws of physics, would very well be the most important discovery ever made. Yet, it would be bittersweet to know that our own Universe is nothing unique, and we are just one of many. Irregardless of the impact of the proof that parallel universes exist, it is undeniable that it will open the doors to inconceivable research and exploration never before possible.

#### Bibliography

1. Kestenbaum, David. "The World's Largest Particle Accelerator". Research News. 2007. NPR. May 11, 2008. <http://www.npr.org/templates/story/story.php?storyId=9473392>
2. "Looking for Extra Dimensions". Experiment. The Official String Theory Website. May 8, 2008. <http://www.superstringtheory.com/experm/exper5.html>
3. "M-theory, the Theory Formerly Known as Strings". Cambridge Relativity: Quantum Gravity. May 10, 2008. [http://www.damtp.cam.ac.uk/user/gr/public/qg\\_ss.html](http://www.damtp.cam.ac.uk/user/gr/public/qg_ss.html)
4. Michio, Kaku. *Hyperspace: A Scientific Odyssey Through Parallel Universes, Time Warps, and the 10th Dimension*. New York: Doubleday Dell Publishing Group, Inc. 1994.
5. "Michio Kaku Talks Parallel Universes". Science and Nature: Space. BBC Home. May 10, 2008. [http://www.bbc.co.uk/science/space/spacechat/livechat/michio\\_kaku.shtml](http://www.bbc.co.uk/science/space/spacechat/livechat/michio_kaku.shtml)

6. "Parallel Universes". Science and Nature: TV & Radio Follow-Up. 2002. BBC Home. May 8, 2008.  
<http://www.bbc.co.uk/science/horizon/2001/parallelunitrans.shtml>

## Sample Paper 2

Kara Runsten, Spring 2008

Dr. Gingrich Period 1

Journalism: How has coverage of the war in Iraq affected American citizens' views on  
**Background**

The way and to what extent information is given to the public by the media has a profound impact on general sentiment toward a particular issue. Journalism has continued to evolve in recent years as more technology has been developed, and people have greater access to information now than in any other period in history. Internet newspapers and journals give people access to a wide range of information at the click of a button (Light in dark corners). This doesn't mean, however, that everything conveyed is the truth or that people will be motivated enough to go seek the truth. One current controversial issue pertaining to the journalism is the Iraq War. Public opinion has changed drastically from the beginning of the war in March 2003 to the present. Early victories seemed to ensure a quick win, but as more and more troops were being sent and none were coming home, Vietnam crept back into the minds of a fed up American people. The revelation that there were in fact no "weapons of mass destruction", the rising death toll, and the mistreatment of prisoners at Guantanamo Bay all contributed to the decline in support for the war in Iraq. UPI-Zogby International conducted a survey in 2007 where they found that already half of Americans think the war in Iraq resembles the war in Vietnam (UPI Poll: Iraq is like Vietnam for U.S.). The continuation of the war has also been drastic to President Bush's approval ratings as they continue to plummet. What effects is the media itself having on public opinion about the war? At the beginning of the war censorship was a key issue. And as the war drags on some worry that it is vanishing together. The question of the media's effect on public opinion is important because it is the industry where it needs to improve as well as provide some insight into human chaos and mass sentiment.

My own interest in journalism began three years ago when I applied to be on The Hood. I've learned so much from the experiences in that class including how to be a good reporter and how to write an interesting, credible article. Learning as much about the media as I can now is important as I will take on the role of editor-in-chief next year. I would also like to pursue a career in journalism in the future and will be doing an internship next semester at a local paper to start my journey. The issue of the Iraq war especially interested me because of the flaws in media coverage and the decline in coverage of the war in general. I want to be a credible source of information in the future and looking into the media field and its flaws now will hopefully prevent more mishaps in the future. Literature Review

In the article appropriately titled "Weapons of mass distraction," the author addresses the issue of censorship early in the war and its effects on public opinion at the time. Soon after the start of the war it was found that only 25% of Americans opposed it. These numbers shrank further after fighting began. However, it was also found that in most other countries public opinion was more stable.

90% of the population opposed the war (Weapons of mass distraction). These statistics obvious that something swaying public opinion in America was not in other countries versa. This particular author believes that the cause for support of the war had to do with propaganda in the United States. It was found that most advocates of the war were the getting large amounts of free press coverage because they claimed they had "inside" information, and this caused the public to favor the war. Another main argument in this was that the phrase "weapons of mass destruction" was just ambiguous enough to strike into the hearts of Americans and make them want to go to war.

The findings in the article seem to have good foundation. The author thinks that President knew he would not be able to fight an unprovoked war in Iraq so he decided to use the "weapons of mass destruction" to garner support. The author goes on to make a huge list of things happening in America as well as around the world that could be considered disastrous such as bad meat, arms sales, and climate change. These arguments are able to portray the ambiguous the phrase really is, and how the American public was so easily duped. The author also reported that most Americans are dangerously uninformed about the world around them because of propaganda in the media. Just because one watches the news does not mean they are watching the truth. The statistics and examples provide evidence to support the claim that Americans are not getting true information all the time. That is why public opinion differs greatly between America and other countries. The findings of this article are important because they reveal some of the problems with media today and advocate the need to research and not believing everything heard on the news. Exposure of problems with the media is key to improving it and helping readers and viewers make educated opinions about the war.

Another article that provided evidence of the misleading media coverage of the war was by Michael Massing. In it he criticized two New York Times reporters who wrote an article entitled, "The war we might just win." These two reporters advocated themselves as critics of the war and the Bush administration's handling of it, yet they continued to publish articles celebrating the war. Apparently the White House was so pleased with the article they quickly distributed it to the press corps (Massing). The misleading nature of this coverage leads to questions about how it impacted the American people. This kind of hypocrisy in the media leads to inaccurate facts and uneducated opinions.

An article by Laura Smith-Spark for the BBC discusses the issue of whether or not Iraq is "vanishing from U.S. view." This article provides a refreshing angle of American public opinion from a British media source. According to a study by Pew Project for Excellence in Journalism, American media coverage of the war has declined to just 3% in 2008 as opposed to 15% in 2007. Another study by the same organization revealed that only 28% of Americans polled in 2008 could give a correct figure of the number of troops killed in Iraq as opposed to about 50% last year (Smith-Spark). The article puts the decline in coverage down to two factors. When Democrats took control of Congress in early 2007 debates about the war were heated as ever, but when Bush won funding for the war over the summer the debate died and there was subsequently less news coverage. The second reason was that the "troop surge" plan in which Bush sent more troops into Iraq actually decreased the amount of violence.

less news coverage. Thirdly, the presidential race has stolen the limelight in the media economy has become the major issue concerning Americans rather than the war that so far from home for most Americans. Most candidates have chosen to focus on other top debate rather than the war. This is part of the reason for the vanishing act along with the policy of keeping troops stationed there indefinitely (Feldman). Additionally, the risk to journalists in Iraq is great which may also lead to less coverage. Smith-Spark also adds that at this stage in the game most Americans have pretty much made up their minds as to whether they support the war or care at all, so they tend neither to care as much nor follow the news as closely. This detachment of the war effort from American society is often hardest on the troops and their families, as they are not getting as much support from the community. This parallels with the reaction of the public to returning troops from Vietnam who were of with a less than warm welcome home.

If Americans are not well informed about the war, it may impair them from making an choice for a new president in the upcoming election and thus prevent them from shaping popular policy. A sudden increase in troop deaths or a major debate between president candidates may cause media attention to shift back to the war, but for now the public is apathetic. This apathy reveals something important about the human character: things that are dragged out bore people and make them less likely to care about a particular issue.

Missing from the research are other ways that the media affects public opinion besides censorship and lack of coverage. Also, the articles are mostly devoid of opinions directed at the American citizens themselves to reveal what their views on the war actually are and how the media has shaped their views. This could provide key insight into the issue because people directly affected by the media would be able to reveal how it has affected them. I would conduct a study on American citizens of different ages, sexes, and ethnic backgrounds to see how the media affects their views on the war in Iraq. It would be interesting to see if there are differences in age, sex, and ethnicity really do affect views on the war and how Americans perceive the media. A series of interviews would have to take place, and a large amount of people would have to be interviewed in order for this research to be at all accurate.

### **Data Collection/ Research Methodology**

Given current resources I did conduct the above experiment, but on a much smaller scale which was not nearly as precise. I surveyed people from my mother's workplace and my school which, granted, does not provide the most ideal demographic, but it did provide some insight. I asked them first about their opinions on the war and then how often they see it in the news and how they get their information. I also asked them whether the war was getting adequate coverage and whether they believe the media affects their views. If I had time to do more extensive research with my current resources I would play the same people clips of news coverage with obvious bias either for or against the war and ask them whether or not they were inclined to believe it. One-on-one interviews might be beneficial rather than an anonymous survey. It would be important to find out how much time they have access to the media and how much they take away from each sitting. I would also need to do some more research and compile some sort of chart that would relay the information to the rest of the world.



If I had unlimited resources I would do this experiment on a much larger scale with people across the country. I would need a staff of interviewers, tape recorders, a place where the data could be analyzed, a statistician, and preferably access to a major media corporation to familiarize myself more with how they work and how credible they are as a company in relaying information to the public. This research could be very useful in the upcoming presidential election as candidates need to know where the country stands on the issue of the war. It would also be beneficial to media so that they can see how they are affecting the country and learn how to improve the information they give and the way they give it.

## Findings

The following is a list of data compiled from my survey. Each answer was broken down into the statistics of men, women, adults, and teenagers, as well as the total statistics for each question.

1. What were your views about going to war in Iraq at the beginning of the conflict?  
 |Opinions |Male |Female |Adult |Teenager |Total | |Pro |43% |25% |20% |40% |33% | |Against |57% |25% |20% |50% |40% | |No Opinion |---- |50% |60% |10% |27% |

2. What are your views now?  
 |Opinions |Male |Female |Adult |Teenager |Total | |Pro |14% |20% |----- |6% | |Against |57% |63% |60% |70% |67% | |No Opinion |29% |38% |20% |38% |30% |

3. How many times a week do you watch the news?  
 |Amounts |Male |Female |Adult |Teenager |Total | |Daily |29% |25% |60% |20% |33% | |3-4 week |43% |12% |----- |40% |12% | |1-2 week |14% |25% |----- |20% |13% | |Never |14% |38% |40% |20% |27% |

4. How many times a week do you read the newspaper?  
 |Amounts |Male |Female |Adult |Teenager |Total | |Daily |14% |38% |40% |20% |27% | |3-4 week |----- |----- |----- |----- |----- | |1-2 week |88% |37% |60% |60% |60% | |Never |----- |25% |----- |20% |13% |

5. Do you feel that the War in Iraq is getting adequate coverage in the news as compared to issues like the presidential race?  
 |Male |Female |Adult |Teenager |Total | |Yes |29% |12% |60% |----- |20% | |No |71% |88% |40% |100% |80% |

6. Do you know as much about the war as you do about the presidential race?  
 |Male |Female |Adult |Teenager |Total | |Yes |57% |12% |60% |20% |34% | |No |43% |88% |40% |80% |66% |

7. How often do you do a background check of information presented to you through media sources like broadcast journalism and newspapers?

|      |        |       |          |       |        |     |     |     |            |
|------|--------|-------|----------|-------|--------|-----|-----|-----|------------|
| Male | Female | Adult | Teenager | Total | Always | 12% | 10% | 6%  | Occasional |
| 50%  | 60%    | 50%   | 47%      | 47%   | Never  | 43% | 38% | 40% | 40%        |

8. Do you believe the facts presented to you through the media has shaped your opinion of the war in Iraq?

|      |        |       |          |       |     |     |     |     |     |     |    |     |     |     |
|------|--------|-------|----------|-------|-----|-----|-----|-----|-----|-----|----|-----|-----|-----|
| Male | Female | Adult | Teenager | Total | Yes | 29% | 63% | 80% | 30% | 47% | No | 71% | 70% | 53% |
|------|--------|-------|----------|-------|-----|-----|-----|-----|-----|-----|----|-----|-----|-----|

### Analysis

The results of my survey seem to correlate effectively with the research done in the article. From the declaration of war on Iraq to the present, those supporting it have dropped. This seems to support the fact that after no "weapons of mass destruction" were found and more and more soldiers began to die, many became disillusioned with the war. 80% of those surveyed believe that the war in Iraq is not getting adequate coverage in the news compared to issues like the presidential race and 66% said they knew more about the presidential race than the war even though the war has been going on much longer. This supports the fact that the war is "vanishing" from U.S. view. An alarming 40% of those surveyed never check the credibility of the news they are receiving, calling into question whether their opinions are even valid and displaying quite clearly the need for news organizations dedicated to the unbiased truth. 47% think that the media affects their view of the war. This large number shows that Americans are influenced by news coverage and benefit from accurate, unbiased information on which to base their own educated opinion.

The brand new research I am able to contribute to the field consists of how age and gender affect people's view on the war. While almost half of the men were pro-war at the beginning of the war, 25% of females were and by the end no females were pro-war while 14% of males still were. This shows that females were more skeptical of the war from the start. Also, as of present, 20% of teenagers are pro-war while 20% of adults still are. This shows that teenagers are generally of the same opinion as women.

My study also found that males have an edge on females when it comes to watching the news but females are more likely to read the newspaper daily. Adults have a clear lead when it comes to how much they watch the news and read the paper over teenagers. This leads one to conclude that adults have the advantage on being able to make educated opinions as long as the information they are taking in is credible.

The majority of males, females, and teenagers feel that the war in Iraq is not getting adequate coverage as compared to the presidential race. Females and teenagers admit that they know less about the war than the presidential race. This seems quite alarming because the race has been going on for about a year while the war has been going on for about a decade. Perhaps the most alarming statistic is the fact that about 40% of males, females, adults, and teenagers never check the credibility of the information they receive from the media. How can one form an educated opinion about the war without knowing if the information he or she has is accurate seems almost impossible. These people are also among the 63% of females and 80% of males who feel that the media affects how they view the war. Because the credibility of their information could be questionable this leads to the conclusion that their opinions might be biased.

questionable. These two statistics combined depict a powerful uncertainty as to the credibility of the opinions Americans possess about the war.

## Conclusion

This research will not stop the war in Iraq from becoming another Vietnam, but it can improve media coverage and help Americans make more informed opinions about the war. Although today there is more access to information than any other time in history, credibility is the key. Undercover government censorship and lack of coverage leads to an uninformed population as shown by my preliminary study. Trends within sex and age groups also are alarming. Perhaps if we weren't so ill informed our opinions would not differ so much from those of other countries. In order to make my own research more credible and to not seem like a hypocrite, I would like to continue to survey a larger amount of people and perhaps add a few more interviews into the mix. A greater demographic would give less biased opinions and all confirm my preliminary results. It would be great if my findings can help make a change in the credibility of news and allow Americans to make better informed decisions about the war and other issues that concern them. Questioning the media is something we should all do and the media should do its part to keep us from needing to question it.

## Works Cited

- Feldman, Noah. "Vanishing Act." New York Times. 13 Jan. 2008. 15 May 2008. <<http://www.nytimes.com/2008/01/13/magazine/13wwln-lede-t.html>>.
- "Light in dark corners." The Christian Century. 6 May 2008: 8. Student Resource Center - Bronze. Gale. 15 May 2008. <<http://find.galegroup.com/srcx/infomark.do?&contentSet=IAC-Documents&type=retrieve&tabID=T002&prodId=SRC-3&docId=A178794119&source=gale&srcprod=SRCS&userGroupName=alpharetta&version=1.0>>.
- Massing, Michael. "The war expert: wrong wrong, wrong again. But the media still watch." Columbia Journalism Review Nov-Dec, 2007: 18. Student Resource Center - Bronze. Gale. 15 May 2008. <<http://find.galegroup.com/srcx/infomark.do?&contentSet=IAC-Documents&type=retrieve&tabID=T002&prodId=SRC-3&docId=A172012911&source=gale&userGroupName=alpharetta&version=1.0>>.
- Smith-Spark, Laura. "Is the Iraq war vanishing from US view?" BBC News. 22 March 2008. <<http://news.bbc.co.uk/2/hi/americas/7308882.stm>>.
- "UPI Poll: Iraq is like Vietnam for U.S." UPI NewsTrack. August 31, 2007. Student Resource Center - Bronze. Gale. 15 May 2008. <<http://find.galegroup.com/srcx/infomark.do?&contentSet=IAC-Documents&type=retrieve&tabID=T004&prodId=SRC-3&docId=A168209568&source=gale&srcprod=SRCS&userGroupName=alpharetta&version=1.0>>.
- "Weapons of mass distraction." World Watch. Sept-Oct 2003: 9. Student Resource Center - Bronze. Gale. 15 May 2008. <<http://find.galegroup.com/srcx/infomark.do?&contentSet=IAC-Documents&type=retrieve&tabID=T004&prodId=SRC-3&docId=A168209568&source=gale&srcprod=SRCS&userGroupName=alpharetta&version=1.0>>.

Documents&type=retrieve&tabID=T002&prodId=SRC-3&docId=A108051283&source=gale&srcprod=SRCS&userGroupName=alpharetta&=1.0>.

Paper #3  
Namrata Kolla

AP English

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23 May 2011

### Eating your neighbor may not be a bad idea

Public nudity, incest, and foot binding—as observed in China—are all practices emphatically looked down upon by human society. Among these taboos, however, is a custom that is unknowingly executed in every branch of the animal kingdom: cannibalism. Cannibalism is “the eating of any animal by another member of the same species” (Cannibalism). Because of its hush-hush reputation in humankind, research has been extremely limited in studying what drives cannibalism and whether it actually provides evolutionary *benefits* to those animals that practice it. As open-minded as *Homo sapiens* claim to be, I do not believe that we have probed into this subject nearly enough, especially when our results could provide zoologists with new, state-of-the-art methods of conserving those endangered species that are rapidly depleting around the globe. The

more we understand about why animals behave the way they do, the easier it will be to help them—this includes studying their “dark side” with as objective a view as possible.

In a survey I conducted of twenty-three people (who were of both genders, were from various age groups, and were not professional zoologists), fifteen responded to my open-ended question “For what reason(s) do you think animals would display cannibalistic behavior?” with the sole answer starvation. It seems as though the common belief among our population is that extreme hunger is the only reason animals would resort to eating their own kind—this could not be further from the truth. Cannibalism comes in many forms including size-structured cannibalism, sexual cannibalism, intrauterine cannibalism, filial cannibalism, and famine-related cannibalism (the most well-known). Besides the last type, all of these variations occur under normal, “healthy” conditions and are carried out intentionally by species from all nooks and corners of the animal kingdom.

In the article “Sharkland Animal Cannibalism” by PBS, all five types of cannibalism are described and numerous examples of species are provided for each. The author emphasizes the widespread use of cannibalism by cataloguing all of the various classes at which cannibalism can be found. At the beginning of each paragraph, the author shocks the readers by illustrating a savage example of cannibalism; at the end of each paragraph, however, the author explains how the cannibalistic behavior is actually advantageous to the survival of the population. By creating these contrasting sentiments, the reader is forced to realize that cannibalism is not what it seems like at first-impression. One example of this technique can be observed when the article studies the behavior of reptiles. In crocodile infested areas such as the Nile, larger crocodiles will

consume smaller members of their own species (Sharkland Animal Cannibalism). It seems ludicrous that any animal would consume one of its own just because it is larger than them; however, the article defies that assumption by explaining that this example of size-structured cannibalism is beneficial because ensuring that fewer organisms are competing for the same niche improves the fitness level of the species as a whole, and size-structured cannibalism naturally selects for larger size in the gene pool so larger animals can pass down their “large” genes and promote larger varieties of their species. The organizational method of this article is its strongest attribute because it highlights how cannibalism has beneficial outcomes despite seeming like a ridiculous, barbaric behavior at the surface.

In the book “The Praying Mantis, Insect Cannibal”, Lilo Hess looks especially into the behavior of the praying mantis. This book is different from all of the other sources in that it is written in a narrative format. Pictures supplement the text by depicting the behaviors Hess describes in her words, and she follows the entire life cycle of a praying mantis from the egg case to the full-grown adult stage. Although the word “cannibalism” is part of the book’s title, it is only described when Hess explains the mating routine for praying mantises. Praying mantises feed on flies, mosquitoes, beetles, and caterpillars; they only feed on each other subsequent to sex (Hess). After copulation, the female praying mantis will consume her partner (unless her partner is able to make a hasty get-away first); this behavior ensures that she has a “last-minute meal” before entering her pregnancy during which it becomes increasingly difficult to hunt and find her own food. A prime example of sexual cannibalism, the female praying mantis makes certain that her offspring survives by opportunistically feeding when food is readily

available. One piece of information lacking from this source is the percentage of females that had not fed on their partners during mating but were still able to survive and give birth to offspring. This information would have been valuable because it would have underlined the importance of sexual cannibalism to the fitness level of the praying mantis.

Exemplified by crocs and praying mantises (among numerous others), cannibalism comes in multiple forms, mostly caused by innate inclination rather than extreme, famine-related environmental conditions. Besides size-related and sexual cannibalism, intrauterine and filial cannibalism are also common occurrences. Intrauterine—otherwise known as “within the womb”—cannibalism is most prevalent in shark species such as the sand tiger shark. The first young to develop within the mother’s uterus feed on all of the underdeveloped eggs; this process is continued until only one baby shark remains in the womb. “This unusual form of cannibalism, in which the young eat their brothers and sisters before birth, ensures that only the strongest sand tiger sharks are born” (Fredericks). Fredericks uses diction so simple that an elementary school student could understand the concept, even offering a glossary in the back for terms such as “uterus” which may be unfamiliar to a younger audience. His generalized description takes cannibalism away from its reputation as an unnerving taboo and puts cannibalism under a perspective that portrays it as just another form of natural selection. Filial cannibalism is the eating of offspring by grown adults of the same species: “Male lions and barn cats sometimes kill and eat the cubs of another male. When this happens, the mothers of those cubs become ready to mate again. This allows the killer males to mate with the mothers of the cubs they just ate. It is one way to ensure that only the strongest

members of a species produce future generations” (Fredericks). Again, with short syntax and colloquial diction, Fredericks makes it easy to follow the reasoning behind filial cannibalism and see why cannibalism can be an understandable and pragmatic method of survival. By leaving out the gruesome details as to how lions kill the cubs (which pictures and videos of cannibalism unnecessarily provide), readers look at the overall consequences of the behavior and how it increases the chances of survival for the species in the long run.

Out of all of the forms of cannibalism, filial cannibalism interested me the most because I was intrigued by the idea that adults could fight their inclination to protect and nurture their children by turning on them and killing them for the good of the population. While researching this area of cannibalism, I found an experiment conducted by Hope Klug and Kai Lindstrom on the selective filial cannibalism of Sand Goby fish. In summary, a male Sand Goby was put in an isolated tank with one female and was made to mate with the female. After she laid her eggs on one of two nesting grounds, she was removed and a second female was added to the tank. The male was then made to mate again and the female eventually laid her eggs on the second mating ground. Finally, the second female was removed as well, and the male Sand Goby was observed for four days to find a correlation between the eggs that he consumed and the phenotype of the eggs that he consumed (Klug and Lindstrom). The two scientists found that the preferred choice for dinner for the male Sand Goby was the larger eggs laid by the second female. Because larger eggs take longer to hatch than smaller eggs, and because eggs laid by the second female would obviously hatch after the eggs laid by the first female, the scientists concluded that the male Sand Goby consumed this demographic so that he would have to



spend less time waiting for the eggs to hatch and could return to the mating pool faster. Although he had consumed eggs that would have potentially been his offspring, he actually raised the number of offspring he would produce in a *lifetime* by returning to the mating pool and mating with relatively more females. Therefore, filial cannibalism can result in a greater number of individuals in the long run—sacrificing a few means receiving more as a whole.

Because I did not have the resources to repeat this experiment or conduct a similar experiment, I had to find another way of studying filial cannibalism. Knowing that hamsters were common practitioners of this variation of cannibalism, I interviewed my mother, Sunita Singh, about her experiences with a hamster she had that gave birth to two generations of litter:

**Me:** “One of your pet hamsters had many babies. Tell me about the experience and how she got pregnant in the first place.”

**Singh:** “Well, I actually bought a Siberian dwarf hamster from the store pregnant unknowingly. She gave birth to four baby hamsters—two died and two lived. It was pretty stressful because they were an unexpected surprise. It got even more stressful when she then mated with one of the two hamsters that lived and gave birth to six more hamsters of which three died and three lived. I had to keep the males away from the children because I had read that they would kill the children if the mother left them alone even for a moment.”

**Me:** “If the males weren’t there to kill them, why did some of those babies die?”

**Singh:** “Males are not the only ones to kill. A few of her litter may have died naturally, but I think the mother killed some of them too, probably to save her resources. She probably thought it was better to feed and take care of three babies sufficiently than six babies insufficiently... You can imagine how six babies would be lot of work.”

**Me:** “Did you ever actually catch her eating any of the babies?”

**Singh:** “I never caught her doing it, but I’m still pretty sure she did. A couple babies had simply disappeared from the cage, and they weren’t big enough to climb up and through the cage bars yet. Also, I found a baby once with its ear partially bitten off, and only the mother hamster had teeth large enough for biting at that time. Additionally, the males were in a separate cage, so they couldn’t have attacked the babies. The mother just had to be the culprit.”

**Me:** “Have you ever observed such behavior in any of your other pets?”

**Singh:** “I had two big fish once that laid a bunch of eggs in a sandy pit at the bottom of my aquarium. I don’t know whether it was the male or the female, but it was definitely the same species cannibalizing on those eggs.”

**Me:** “So in this case, you actually saw them eating their eggs?”

**Singh:** “Yes.”

**Me:** “What were the other fish in the aquarium doing?”

**Singh:** “As far as I could see, they weren’t eating the eggs. They were just swimming around not doing much about it. Not that they *could* do much—those two fish were the largest two in the tank” (Singh).

This interview further exemplifies the fact that cannibalism can occur despite starvation or limited resources. The hamster and the fish had been given plenty of food and water, and the bedding/aquarium was regularly cleaned for comfort. The environment was also sound, leaving no eminent source of stress for her pets. One error that could have been caused in the hamster’s case is if my mother had handled the babies during the first two weeks of their birth. If her odor had been left on the babies, the hamster may have assumed that those babies were not hers and progressed to kill them because she only wanted her progeny to survive. Most probably, though, filial cannibalism was executed by the hamster and fish for purely evolutionary reasons.

My mother is only one of the millions of pet owners out there, but she was the most accessible person with knowledge about this topic. If I had unlimited resources, I would interview pet owners from all over the community that have reptiles, birds, fish, and other exotic pets with the same questions to validate (with more examples) the reality that animals do not have to be starved to be cannibalistic. With more time, I would also set up appointments with handlers from various parts of the Atlanta Zoo and ask them whether they have observed cannibalistic behavior (of any type) within the magnanimous variety of species they have there.

After analyzing what zoologists have already observed in the behavior of animal cannibals and after taking an interview of a pet owner with first-hand experience with cannibalism, I have ascertained that cannibalistic behavior is intentional as often as it is

unintentional (caused by severe environmental conditions) in the animal kingdom. This information is the most pertinent to zoologists—especially those involved in wildlife conservation. Cannibalism in humans and cannibalism in animals must be studied separately; in the human world, cannibalism is almost always due to either psychosis or starvation, whereas in the animal world, cannibalism is just another type of Darwinism which helps select for the strongest individuals in a population. If a zoologist observes an organism in captivity about to consume one of its young, his or her immediate reaction would be to stop the act from occurring, especially if that organism is an endangered specimen. This is actually the *wrong* response because what that animal is doing will benefit the population in the long run; it should actually be left alone. Cannibalism means subtracting one and adding two. As difficult as it may be for conservationists to watch one of their priceless animals be eaten by one of its own, they must trust Mother Nature to bring back more in the future than what they are losing in the present. Similar to vaccinations which cause a little suffering at first, but are taken anyway in hopes of vitality later on, cannibalism is a gift wrapped in some thorny packaging.

### Work Cited

- "Cannibalism." *Encyclopædia Britannica*. 2011. *Encyclopædia Britannica Online*. Web. 21 May 2011. <<http://www.britannica.com/EBchecked/topic/92695/cannibalism>>.
- Fredericks, Anthony D. *Cannibal Animals, Animals That Eat Their Own Kind*. New York: Franklin Watts, A Division of Grolier Publishing, 1999.
- Hess, Lilo. *The Praying Mantis, Insect Cannibal*. New York: Charles Scribner's Sons, 1971. Print.
- Klug, Hope, and Kai Lindstrom. "Hurry up and hatch: selective filial cannibalism of slower developing eggs." *Biology Letters*. 4 (2008): 160-162. Web. 11 May 2011.
- "Sharkland Animal Cannibalism." *PBS Nature*. Educational Broadcasting Corporation, 2011. Web. 21 May 2011.
- Singh, Sunita. Personal Interview. 15 May 2011.

## Paper #4

Michael Lou  
5/12/06  
5th period

### Professional Research Paper: Medical Ethics

"You do solemnly swear, each by whatever he or she holds most sacred, that you will be loyal to the Profession of Medicine and just and generous to its members..." (Hippocratic Oath). Each year, thousands of individuals are sworn into the medical profession under these words and a ceremony that has stood the test of time for almost 2 millennia. By agreeing to the stipulations stated in this oath, an individual is committing himself/herself to a profession that is almost as ancient as human civilization. A famous historian once said, "The medical profession in itself constitutes an integral part of human history; it is a well known fact that each major civilization has some role similar to such a profession" (Panno 54). In fact, the medical profession is present wherever and whenever there are signs of human habitation. From the rainforest to the urban jungles, human kind cannot "live" without its physicians, or depending on where one might live, medicine men.

Most people agree that the most tempting and domineering characteristic of the medical profession is the size of salaries. In a universe where entropy is constantly increasing, more units of one object is always more favorable than less units of another object. It is therefore no surprise that public opinion views the medical profession as a virtual vacuum of cash. Unfortunately, this aspect has also led to the assumption that the only respectable thing about being a doctor is the size of the paycheck. Because of hankering greed, many individuals are now pursuing the medical profession, of which these individuals would definitely defect from had there been equally paying professions elsewhere. Such "gold diggers" are responsible for inherently corrupting such an old and respectable profession. It is therefore ironic that I find myself conforming to these "gold diggers", of whom I so wholeheartedly detest. In today's society, money is an important ingredient in everyday life. In fact, money is crucial for survival in everyday life. The average doctor makes around 200,000 dollars annually (Rosenthal 3). Thus when compared to the average salary of an engineer at around 60,000, the doctor's salary is significant more attractive. There is no aesthetic way to put it, Darwinian survival and materialism far outweighs any other needs. Although the salary is one of the reasons why I elect to follow the medical profession, it is far from the main

reason or even a major reason. As a child, I was always fascinated by anything biotic. This characteristic translated into hundreds of trips to natural history museums and zoos much at the expense and delight of my parents who gladly endorsed my fascination. As I physically grew, my magnetic attraction to all things science never waned. In truth, people have always supported the assumption about being "born into careers." If this is the case, perhaps then I was "born to do" something biologically related. What better choice is there in the field of biology than the profession of medicine? In fact, the outstanding salary seems even more attractive at this point. I must ask myself this: Which will it be, a "starving" oceanographer, or the luxuries of the medical profession?

Whenever careers are discussed, two subjects far outweigh the importance of all other factors. One of these subjects is the pay, while the other one is the "hours". Marilyn Rosenthal writes in her periodical, "As compared to other professions, doctors work less days of the week...three days for the typical physician as compared to five days for the average engineer" (2). However, things are always not what they seem. Although doctors only work three day weeks, they work far longer shifts. Rosenthal backs up this claim by saying, "The 40 hour work week holds for most professions, but for the average surgeon, the average work week is somewhere around 60 hours" (4). Therefore, although doctors work fewer days, they work much longer shifts. This is one of those negative aspects found in almost all positive things. A doctor's pay certainly is attractive, but such a handsome salary carries with it an alarming price. Such a price includes chronic fatigue, high stress, and disruption of circadian rhythms. Of course, most high school students possess far in excess one or more of these factors anyways. Under this circumstance, a doctor's life is a mere adjustment from the ordinary. There are, however, some differences. A career is a life long commitment to a certain profession. It is relatively easy to say that one went without sleep for four days as compared to being continuously plagued by insomniac fatigue for the rest of one's life. A doctor's long hours certainly are one factor that must be taken into consideration. In many ways, this aspect separates the good from the bad. A "gold digger" would respond negatively by "slacking off" or napping during operations. To the "gold diggers", money is the only object worth considering. Since they are only pursuing money, such behavior is therefore justifiable. Contrary to this aspect, the good and "responsible" doctors would stand guard at their posts like sentinels or ever-alert guard dogs with their ears cocked and ready to investigate any occurrences. Such doctors are driven by a purpose and would remain almost immune to the attrition of chronic fatigue. This type of doctor is the true medical professional as opposed to all those "phony" masses out there. With hard work and dedication, this type of doctor will stand as role models for generations of doctors to come.

Whenever a person participates in a job interview, three topics always come up. One of these topics is the pay, another one is the hours, and finally the last one is

what the job actually does. The "medical profession" is a rather general and broad term for a variety of different occupations. There are as many different types of doctors as there are parts of the body. From the head to the toes and from the fingers to fallopian tubes, an entire person's external and internal anatomy can be described in terms of a smorgasbord of medical professionals. Because of such diversity, it is impossible to describe precisely what the job expectations for a doctor are. Never the less, there are certain cross- dimensional parallels in the medical profession. Margaret McCartney writes in her article, "The prefix Dr. causes needless confusion, for example dentists and PhD's also call themselves doctors. Yet, regardless of ambiguous prefixes, all Dr.'s have to interact with people" (1). The single most important job expectation for a member of the medical profession is to be able to interact with people, or living organisms depending on one's specialty. No object illustrates this characteristic better or more thoroughly than a doctor's lab coat.

Regardless of nationality or culture, a doctor's image almost always consists of a pristine, spotless white lab coat. This lab coat highlights the principle color imagery associated with the medical profession. The color white as not consisting of a creamy color, but instead consists of a pure, spotless, emotionless white. The color white symbolizes the sterility/cleanness of the medical profession. Most modern medical facilities have knowledge of the Pasteur microorganism theory of disease and infection. It is therefore necessary to keep the working environment as clean as possible. However, this sterility can also imply doctor-patient interactions. As hospitals experience an increasing patient volume, new management techniques must be utilized. This means that hospitals are focusing more and more on standard business "assembly line" practices. Such actions would unfortunately sacrifice physician-patient interaction time for efficiency and speed. As a harbinger of the future, many surgeons are now regarding their patients as more of a T-bone steak than as an actual living person. McCartney adds, "Most patients undergoing operations rarely, if at all, see their surgeons" (2). The idea of a complete stranger meddling with a person's internal organs is almost as hair-raising as an alien abduction. Granted, efficiency is good, but hospitals need to realize how important such interactions are. Since antiquity, doctors usually made house calls. In this circumstance, the doctor is almost like a family friend of sorts. Ever since the advent of hospitals for mass medical treatment in the mid 19th century, the doctor-patient gap has grown considerably wider, and continues to do so at an alarming rate (McCartney 5). For obvious psychological reasons, patients need the comfort of knowing that they put their lives in the hands of someone they know and trust. Furthermore, by knowing their patients, doctors are able to make a more acute diagnosis of their patient's illnesses. The shrinking gap between doctors and patients has led to a feeling of insecurity among the general public. This insecurity has indirectly led to the creation of certain horror films such as *Hannibal* and *Silence of the Lambs*, which further exacerbates this problem. Although efficiency is important, the medical profession's main purpose is to deal



with people. Therefore, sacrificing the interests of patients for efficiency and speed is not only wrong, but also against proper medical doctrine.

In addition to causing a sense of impassiveness, a doctor's white lab coat can also symbolize goodness and compassion. Humans are mainly visual creatures, thus the differences between light and dark are particularly highlighted. The reason why darkness is associated with a negative connotation is because humans cannot see well in the dark. As a result, what one does not know, one will tend to fear. Anyhow, white symbolizes brightness and daylight, an interlude of happiness between the unknown. This connotation describes a doctor's work with accuracy. Indeed, the title of doctor carries with it an almost angelic quality. Doctors are virtual guardians of life, protecting the frail and the weak from the abomination of death. By curing dreadful illnesses and making people well, a doctor's job is always to save people in some way. This is one of reasons why doctors have always been prominent and respected members of society. Yet, once again, recent trends have marred the medical profession. Marilyn Rosenthal writes, "Over the last few years, there have been an increasing number of malpractice cases corresponding with an increase in malpractice insurance" (3). A doctor's entire career is devoted to making people better. Such "malpractices" are sacrileges to this entire ideology and everything the medical profession stands for. Once again, "gold diggers" may be at work along with a long lost friend named greed. As stated in the Hippocratic Oath, a doctor's job is always to help people. Therefore, such "malpractices" are unacceptable especially when greed is a dividend. In "Twelfth Night", Shakespeare wrote, "If music be the food of love, play on." When pertaining to the medical profession, this quote should be revised to say, "If language be the food of medicine, do not play on." The language of medicine is known for its complexity and takes on the enigmatic consistency of Yorkshire pudding along with the simple versatility of week old Jell-O. Supposedly, medical terminology is based on Latin. This is rather surprising as the two are not remotely similar. The Latin language is abrupt and short and designed with simplicity, since the Roman Empire had to subjugate all those uneducated "barbarians". Although medical terminology is based on Latin, the language of medicine tends to be overly complex and unnecessarily descriptive. For instance, the word for "big" in Latin is magna while the word for "big" in medical terms can be maximus and major all at the same instance. Instead of saying small round lower brain, the language of medicine utilizes the needlessly messy and hard to pronounce medulla oblongata. It seems that the language of medicine is designed as a form of "secret" communication between two doctors that will befuddle any nearby nonprofessionals trying to eavesdrop. Although this might be difficult to achieve, the medical professionals certainly were successful at keeping their language undecipherable.

Most medical articles seem to target their doctorate audience instead of the common nonprofessional citizen. This is ironic as any topic that is discussed about

the body is near and dear to all people, not just medical professionals. On the contrary, most medical journals seem to be structured as to specifically prevent the average person from comprehending as if talking about the body was some national security secret. Perhaps such a shroud of secrecy was weaved intentionally to make members of the medical profession look and act smart. If this was the case, then the "code makers" have undeniable success. Not only is medical rhetoric hopelessly confusing, but this barrier of seclusion also seemed to have kept a good many people from pursuing a career in medicine. General public opinion seems to be that only "smart" people get to be doctors. For people pursuing a career in medicine or who are already in the medical family, this assumption certainly boosts self-esteem.

The field of medicine is literally galvanized with controversial issues. From abortion to allergy medication, the changes and events that occur within the field of medicine affect the average individual on a much more personal basis. One of these issues is the applications and usage of stem cell research. The term "stem cells" is adequately named. Initially, all cells begin as stem cells. However, during the course of cell growth, certain segments of DNA are activated and the existing cell begins to turn into the "pre-programmed" cell. Therefore, blood cells and neurons begin as the same cell, stem cells. The difference between them is the way certain segments of DNA are expressed (Gavaghan 4). Hence, stem cells as in all cells "stem" from stem cells.

There are actually two different types of stem cells. One type of stem cells is the adult stem cell. This type of stem cell is easily obtained, but does not seem to "work" as well as its more controversial counterpart. The truth is that no one seems to know where adult stem cells originate. It was commonly thought that all repairs in the adult body were conducted by surrounding tissue. However, recent findings of adult stem traces in many tissues and organs suggest otherwise (Panno 9). Never the less, adult stem cells cannot differentiate as readily as its more controversial counterpart and are thus considered a liability in stem cell research. The latter type of stem cell is the embryonic stem cell. In order to further understand stem cell research, one would need an understanding of the typical mammalian embryo. Immediately after fertilization, the zygote undergoes a period of rapid cell division known as cleavage (Panno 15). After a period of two to three weeks, rapid cell division has caused the zygote to form a hollow ball of cells known as the blastocyte. On the outside, the blastocyte is just a congregation of individual cells hardly recognizable from its final form. However, within the blastocyte on the microbiology level, wonders are literally being worked. When a blastocyte is cut in half, one would expect to see a hollow hemisphere without any particular features of significance. Alas, nature is full of surprises. What one does see is an apparent aggregate of very irregular shaped cells clustered on the inside of the blastocyte much like the chocolate filling one finds when one bites into a Belgian truffle. This mass of cells is termed the "Inner Cell Mass" and when cultured via In Vitro processes, is known as embryonic stem cells (Panno 17). Panno adds in his book, "These cells have the ability to differentiate into a variety

of cells representative of the three germ layers" (18). After these cells are cultured, they tend to form small clumps termed "embryoid bodies" that resemble the original blastocyte. Cell differentiation is also dependent on cell-to-cell interactions. Without their initial hollow covering and signals they receive after implanting in their mother's womb, these cells have no way of differentiating further. Panno makes an analogy by saying, "These cells are like small children trying to find their way home on a very dark night. They have lost their vision, and have no map to guide them" (20). From this stage on, these embryonic stem cells can be virtually programmed to transform into any type of body cell. It is this aspect that makes stem cell research so promising.

Isolating the cell culture is a relatively simple process when compared to controlling the differentiation of stem cells. All differentiation begins at the DNA level when transcription factors, the specific chemical messengers that attaches to a segment of DNA and causes it to become active, enters a cell's nucleus and attaches to a specific DNA sequence. The transcription factors bind to certain sites known as enhancers on the DNA strand. Immediately after the T-factors fuse onto the enhancer site, a nearby enzyme called RNA polymerase is attracted to that site as well. As a result, RNA polymerase, the enhancer site, and the T- factor all form a single colligate known as the activated complex. Immediately after the activated complex is formed, RNA polymerase begins to translate the double stranded DNA sequence into a single stranded RNA sequence. This newly formed RNA strand is called mRNA and attaches itself to tRNA where it is transported out of a cell's nucleus (Panno 21). The tRNA then attaches to specific protein manufacturing structures called ribosomes in the cell's cytoplasm (everything but the cell nucleus). From this process, cell differentiation can be controlled at two steps. The first and easiest step would be at the transcription factor level. By selecting specific transcription factors or growth factors, one can determine which segment of DNA is targeted and thus what type of proteins are in turn manufactured (Panno 22). The differences between a skin cell and a muscle cell is specifically the type and quantity of proteins manufactured. Therefore, correctly selecting transcription factors/growth factors can in fact differentiate stem cells. The second step is much more complicated and tedious. After mRNA is formed, it undergoes natural editing before leaving the nucleus. This editing process can in turn be controlled so that only the desirable protein's coding sequences are present. This also serves the function of selecting the type and quantity of proteins produced and thus differentiating the cell (Panno 24).

Helen Galvaghan writes in her periodical, "Research into all types of stem cells holds promise for both understanding human development and treating disease" (1). The most obvious application for stem cell research would be to create tissues for parts of the body that has been damaged by disease and old age. Katie Greene writes in her article, "A stem cell's unique trait to develop into any type of cell could lead to lab-grown tissues and organs that would be useful for transplants"

(2). Currently, the average waiting time for an organ donation is somewhere around six months. About 1/3 of all patients waiting for organ donations usually die before such an organ is available (Panno 45). By using stem cells, the organ supply can be drastically increased and thus more lives can be saved in the process. Furthermore, there is also the possibility of increasing life expectancy. Old age and eventual death as a consequence of old age is caused by the attrition of tissues within a vital organ. If a faulty organ can be replaced, then there is a possibility of increasing life expectancy because such a replacement would function better than its original "worn- out" counterpart (Panno 47). A similar process is used to increase the duration of antique automobiles. By constantly replacing old, worn-out parts, an antique automobile is still able to function. In this aspect, the human body is truly a remarkable machine of interchangeable parts. Although tissue and organ transplants are exciting incentives for pursuing stem cell research, the most promising application by far seems to be the treatment of chronic illnesses. The ability of stem cells to change into many types of other cells makes them extremely suitable for repairing damages done by cardiovascular diseases and neurological disorders. A heart attack or stroke cuts off circulation to parts of the brain or heart. If prolonged, this could eventually lead to cell death and further dire implications. In these circumstances, stem cells could be injected and induced near sites where cell death has occurred. These stem cells could then be told to differentiate and replace the damaged/dead tissues (Panno 42). Galvaghan states in her periodical, "There are several neurological disorders that may eventually be treated using stem cells, including Alzheimer's, Parkinson's, Tay-Sacs, and Huntington's" (3). Unfortunately, scientist's understanding of Tay-Sacs and Huntington's is so incomplete that many years will elapse before stem cell therapies become available. Never the less, successful clinical trials have been completed with mice afflicted with Alzheimer's and Parkinson's. Alzheimer's disease begins in the hippocampus, an area of the brain that is responsible for memory. New developments in Alzheimer's research have caused three genes by the name of Tau, App, and Sen to be identified with the onset of the disease (Panno 44). Defects in any of these genes cause extensive neuron damage characteristic of Alzheimer's. Stem cells stimulated to differentiate into neurons can be used to replace some of these damaged cells. Experiments with mice indicate that stem cells can connect damaged portions of the brain with healthy neurons, thus lessening the effects of Alzheimer's (Panno 45). Parkinson's disease is similar to Alzheimer's in that neurons are extensively damaged. However, Parkinson's disease is limited to one region of the brain that is responsible for motor control. This characteristic makes stem cell therapy very promising. In fact, experiments with mice have indicated that stem cell therapy can reverse some of damages caused by Parkinson's, particularly the loss of motor skills (Panno 46). Stem cells can also be applied to treat diabetes and certain types of cancer. A periodic writer for Diabetes Week wrote, "Diabetes is responsible for 500,000 deaths annually in North America each year. Treatment is usually very expensive, amounting to nearly 98 billion dollars a year" (Stem Cell 1). Diabetes is mainly

caused by an inability of the pancreas to secrete insulin. In a recent research conducted by the National Institute of Health, cultured stem cells were able to be coaxed into differentiating into pancreatic cells that can secrete insulin (Panno 40). This indicates that stem cells could be used to replace faulty pancreatic cells. These new pancreatic cells would be able to secrete insulin and thus cure diabetes. The periodic writer for Diabetes Week also wrote, "Each year, more than 34,000 children and adults develop Leukemia in the U.S. alone" (Stem Cells 3). Leukemia arises as a result of cancerous bone marrow. In turn, a person's bone marrow stem cells could be collected and forced to differentiate into white blood cells. These white blood cells could then be cultured to increase their numbers. Finally, these cells are injected back into the body where they could destroy all cancerous tissue. Furthermore, a stock of bone marrow could also be made from stem cells. This stock could then be transplanted back into the patient, giving the patient a healthy and cancer free bone marrow (Panno 37).

Obviously, stem cell research has the potential to cure many diseases and save the lives of millions of people worldwide. Yet, the issue of stem cell research is still fiercely debated. Much of this debate centers not on scientific evidence, but on something called "ethical concerns". The single most volatile ethical aspect associated with stem cell research is something known as "therapeutic cloning". The Review of the National Institute of Health's Guidelines for Research Using Human Stem Cells states in its third paragraph, "...the potential of stem cell research does not entail the destruction of human embryos" (1). The main objection to stem cell research stems, not surprisingly, from those ardent conservatives who are willing to ban abortion at any cost. Particularly surprising is article one of the argument present in this "Review". Article one states, "Adult Stem Cells Have Been Located in Numerous Cell and Tissue Types and Can be Transformed into Virtually All Cell and Tissue Types" (2). As stated before, the main issue with using adult stem cells is that the main source of these cells has not been identified. There is no virtual panacea like embryonic stem cells, for adult stem cells found in various tissues tend to travel back to their tissues of origin (Panno 78). Killing human embryos is unfortunate, but currently, human embryos are the only solid stem sources that can be worked with. A particular H.R. 2505 passed in 2001 under the endorsement of President Bush complicates the problem further by prohibiting human cloning under all circumstances (Panno 85). First of all, stem cells are cloned. They have to be cloned in order to generate sufficient laboratory material. Such cloning is termed "therapeutic cloning" and further abhors conservatives who view this as an act of "cloning human embryos and then killing them" (Beardsley 2). Just last year, a more ingenious term titled "High-Tech Cannibalism" was invented to supplement the conservative's spite. Along with the concern for human embryos rises a new debate as to when the embryo is considered human. At the stage where stem cells are obtained, the embryo is a mere mass of cells and has not even traveled to the female's uterus (Panno 75). The general view is that from the moment of birth and on, a human embryo is truly

considered human. If this definition is used, then embryonic stem cells are actually less than human. The counterargument to this is that since what defines humanity is located in any person's genome, an embryo has a full human genome and can be considered human.

Stem Cell research has the potential to save countless millions of lives. Indeed, it ardently follows the medical doctrine of saving lives and helping those in need. Yet, regardless of its applications, there will always be people who criticize any such useful technological breakthroughs as "unethical" and "unnecessary". Because of H.R. 2505, American progress on stem cell research has virtually halted. This means that there might be a potential threat to the virtual monopoly America has long enjoyed in the field of medical research for the past five decades. Indeed, stem cell is controversial and does involve the killing of human embryos. Essentially, the medical profession is one great compromise. Everyday, doctors sacrifice their time and energy to help treat ill patients. Furthermore, every year, billions upon billions of dollars are spent on treating such illnesses that stem cell research has shown promise of curing. Certainly, all this energy and constant cries for cures are not spent in vain? In the future, ardent conservatives who have tried to impede scientific progress for centuries will do everything in their power to halt medical breakthroughs such as stem cell research. After all, most members of the medical-scientific community support such research (Panno 75). Not surprisingly, those who are against stem cell research know shockingly little about stem cells except that they have something to do with abortion. As in most times of strife, the best course of action would be to stay strong. Eventually, the right will overcome the wrong and the medical desire for helping others will overcome ethical concerns.

As a result of doing this paper, I learned that the medical profession is full of surprises. As a small child, I have always learned that the living world is an entire universe by itself. This is in fact one characteristic that allowed me to consider the medical profession as a possible career choice. Furthermore, the anecdote, "Things are not always what they seem" further supplements this things are not what they seem idea. For instance, although doctors work three day work weeks, they in fact work longer hours than most other professions. In addition, stem cells not just originate from any embryo, but the specific inter-cell mass commonly found inside most blastocytes. This research also helped me to understand stem cell research in a totally different light. Before this research, I know preciously little about stem cells and their applications. Upon seeing televised news stories on stem cell research, I usually find myself saying, "Big deal, so what?" However, with this research, my seclusion from such a vital and important field is over. This goes to show that at all levels of life, there are be lurking discoveries just waiting to be made. Whether these discoveries are scientific or personal, the fundamental unit of life is illustrated: complexity.

This research has altered my view of the medical profession greatly. Recent trends

in the medical profession have been alarming and threaten to abolish the medical ideology completely. The medical profession dates back to antiquity and has always been up to this point, a people job. However, recent technology and hospital trends are actually limiting the amount of interaction that normally goes on in this field. There are implications that this trend will continue in the near future. Several medical facilities have considered the possibility of future robots as doctors. Having a complete stranger operating on one is worse enough. What degree of insecurity would be associated with using robots? This ideology is far too optimistic. Although humans are prone to errors, robots and machinery cannot be direct substitutes for surgeons and physicians. Robots are built by humans and what turns out as an engineering mistake may mutate into tragic medical mishaps.

What may be malpractice suits of today will become computer viruses of the future. As a likely prediction, the Hannibals of today will turn into more horrific automated horror films in the near future. In addition, the sole purpose of the medical profession is to help people and cure people from dire illnesses. Stem cell research has shown considerable promise in treating what are previously terminal cases. However, this research is being prevented from reaching its full potential, not because of lack of medical evidence, but because of ethical concerns. The ethical and theological barrier is effectively undermining what may be an important research field. This indirectly illustrates that medicine is not just about curing the sick. There are more sinister aspects of medicine, and this general feeling of insecurity applies to the entire profession as a result.

After conducting this research, I still plan to enter the medical profession. First of all, the medical legacy has become somewhat of a family legacy. Most of my relatives are doctors, and this puts pressure on me as well. Furthermore, this research has given me a brilliant insight into the field of modern medicine. Modern medicine is not just pure doctoral duties; instead it is a virtual amalgam of legal and scientific issues. The more I discover in this field, the more tantalizing this field becomes as a career choice. Modern medicine has made it possible to cure not just the individual, but millions of people at the same time in just one field of research alone. This aspect is even more appealing because I as an individual hope to contribute something to human society as a whole. Life is short and I truly want to do something for all of human kind in my lifetime.

The medical field is full of controversy and at no time in history have the prospects looked more appealing. Although ethical controversy is present in the field of stem cell research, eventual science and the human desire for knowledge will break down the walls of such a heresy. The medical profession has always been about helping people, why not help millions at a time?

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### Bird Flu: A Culture of Fear or a Legitimate Threat?

The pale glow of dawn forces your eyes open as you wake up to yet another day of Hell on Earth. Suddenly you sit up, heart beating erratically, the adrenaline coursing through your veins. Nowhere is safe, nobody can be trusted. So much has changed since that fateful day. As you walk across the desolate streets of a once bustling Alpharetta, the blinding heat suffocates you. The gargantuan carcass of Alpharetta High School lies shattered and broken due to disrepair, its limbs pointing up to the hazy yellow sky. There is no sign of life. Everyone has died save you, the Immune. The enemy of the human race is treacherous and impossible to eradicate. In fact, the enemy is already dead, but continues to kill. Your foe is none other than the avian influenza known as H1N1, or bird flu. Will this new virus cause a worldwide pandemic and mercilessly kill humans to the point of extinction? Will it cause 99.9% of humans to helplessly die and leave the world in a state not unlike *I Am Legend*? Or is it just a myth, perpetuated by the media to such a hyperbolic extent that fear runs free throughout the populace? Though these sound like elusive questions that have indefinite answers, there exists evidence in various mediums that put this subject of ardent contention to rest.

Before being exposed to the various positions regarding the aforementioned subject, one must first understand the background of avian influenza. Bird flu, also



known most commonly as the H1N1 virus, has long been a subject of vehement debate among scholars of the medical community, for fear of it mutating and causing a highly pathogenic viral disease that has the capacity to easily kill and transmit between humans. Bird flu has no definitive origin, in terms of both time and place. However, the first documented case of bird flu was in 1997, in the city of Hong Kong (Thompson 1). Though this particular strain was not exorbitantly pernicious, it still baffled and worried scientists, because there seemed to be an astronomical mortality rate (90-100%), and no cure (Thompson 1). The only way to eradicate the virus was to cull all chickens and remove most of the meat in the affected area, but even this proved to be efficacious only to a shallow extent. In fact, in 2003, there was a relapse of the same strain that appeared in 1997 (Thompson 1). Moreover, bird flu has circulated globally for years, and yet there is still no cure. Studies have been conducted on different strains of this disease to determine its potency and current state. In fact, a study conducted using DNA samples from WW1 victims of the bird flu suggest very surprising attributes of bird flu. For example, researchers found that by minimally altering the protein in the viral DNA, the virus could be easily transmitted among humans (Thompson 1). This is a stunning discovery or a dreadful one, depending on the retrospect one chooses. If the virus is potent and liable to change, then a pandemic is imminent. However, if the virus is not potent in humans and remains the same, then there is nothing to worry about.

Despite the millions that believe bird flu represents a significant threat, there are some who believe that bird flu is of much less concern than the flu we encounter annually. Moreover, they claim that bird flu is not a real threat, but rather a hysteria caused by the voracious and sensationalistic media as well as a heightened sense of

paranoia. Critics of the bird flu often cite the various bouts of paranoia in the US government that wasted millions of tax dollars for ultimately nothing at all. For example, in 1976, a cluster of soldiers at Fort Dix were sickened with respiratory illnesses. Upon further examination, the CDC concluded that it was a form of swine flu, which is related to bird flu, that was transferred from human to human. Immediately, the US initiated an immunization program against this flu, which it believed was highly pathogenic and would cause a worldwide pandemic not unlike the Spanish Flu of 1918. As the US geared itself for a genetic war, doubt roamed free. Each day that the pandemic did not materialize the CDC was criticized for being impatient and foolish. As if the failure of the pandemic to occur wasn't enough, the vaccine proved more deleterious than beneficial. In November of 1976, various cases of paralysis were reported by Minnesota, a state that had immunized roughly two thirds of its occupants ("The Flawed 1976 National Swine Flu Influenza Immunization Program" 1). As time passed and the pandemic did not occur, even more cases of paralysis were reported throughout the nation, eventually totaling to 532 cases with 25 deaths ("The Flawed 1976 National Swine Flu Influenza Immunization Program" 1). Pressure seeming ubiquitous, the CDC conducted studies on the new vaccine to find heartbreaking results. The vaccine was in fact responsible for the sudden paralysis, which came to be known as Guillain-Barré syndrome, and made the victims seven times as likely to have paralysis in their life ("The Flawed 1976 National Swine Flu Influenza Immunization Program" 1). After years of waiting, it became apparent that there was in fact no pandemic. The results of the hurried immunization program were abhorrent. Millions of dollars were wasted, and a mass hysteria resulted in the public fearing for their lives more so than Jews during the Nazi regime. The US

government was held in contempt, and became the laughingstock of the medical world. Deaths totaling to 25 with 532 people paralyzed showed the US, and more importantly the people, the unnecessary loss and anguish that could be incurred as a result of premature decision making. Needless to say, the head of the CDC was swiftly fired, and many top level CDC officials were reprimanded.

The above mentioned situation is the price a nation can pay if unnecessary precautions are taken and there is a preemptive strike. Is that what the bird flu will ultimately amount to? A multitude of critics seem to think so. Furthermore, they utilize a plethora of studies as well as pure logic to demonstrate their claim. For example, a study was conducted to determine the transmissibility of the bird flu from human to human, and the results were quite relieving. The study concluded that bird flu was not in fact easy to transfer, for one key reason (Chadwick 1). This lack of transmission lies in the location of the bird flu binding mechanism. That is, the bird flu does not transfer easily from person to person because of the location of its protein binding (Chadwick 1). The bird flu settles deep in one's lungs, allowing it to cause pneumonia and have deleterious ramifications for its victim; however, since the bird flu does not reside higher up in the respiratory tract, where one sneezes and coughs, it is very difficult for the virus to be transmitted from these mediums (Chadwick 1). Therefore, even if the bird flu was potent and pathogenic to a significant extent (mortal), it would not represent a pandemic threat as it would not transmit easily from human to human. In concurrence with the aforementioned study, various cases of bird flu clusters demonstrate that human to human transmission is unlikely, even in the locations thought to be the origin of this virus, such as China. In fact, as soon as fears began to rise after a man and his son were infected in

Nanjing on December 2, they were dispelled by the analysis of the interaction of these people and the absence of the virus. For example, a man named Lu and his son were infected and thought to have transferred the disease to each other through close contact. However, findings from China's Ministry of Health seem to stipulate otherwise. In fact, studies showed that of the 69 people in contact with the son, none showed signs of infection ("Human-to-Human Bird Flu Transmission Unlikely" 1). Moreover, 20 other people who had close contact with the father, six of them also with the son, seemed to be perfectly fine during observation ("Human-to-Human Bird Flu Transmission Unlikely" 1). Thus, it is evident through scientific study as well as real world analysis of social interaction and the absence of the virus thereof that one can safely conclude that at least for now, bird flu is not easy transmissible between humans. Subsequently, the critics of the bird flu cite the aforementioned characteristic of bird flu as overwhelming evidence that bird flu is not an impending pandemic. As Dr. Paul Offit declares, "Pinning our [fears] on bird flu being the next pandemic strain, I think that is a little misleading" (Chadwick 1).

Critics of the bird flu, in addition to citing studies similar to the above mentioned, splash color on their claim by blaming the media as voracious and sensationalistic. They claim that bird flu concern is nothing but a result of a mass hysteria perpetuated by the media. Moreover, they blame the media as a key proponent to insidiously portraying bird flu as a concern when in fact it isn't. A vast majority of critics state that the media portrays bird flu as a crucial concern for financial reasons, and there are a multitude of examples manifest in our society today that concur. For example, just today, while researching bird flu, I came across a variety of masks, and read some reviews. I saw the

current price for an N95 respirator, \$20. Upon reading the reviews however, I came across some unsettling news: “These are fine against dust, smoke, dirt, and even some biochemical agents. But there ought to be a circle of Hell for people who use panic to jack up the price and sell them as ‘flu masks’” (“Amazon.com: Customer Reviews” 1). Go ahead, read it again. It might seem like a one in a million review, right? Nothing could be further from the truth. In fact, after further research into this particular mask, I saw that it was labeled as an “avian flu” mask. However, it was certified to protect against particles greater than .3 microns, while bird flu is .12 microns (AMAZON). Furthermore, after looking into more reviews, I saw that the prices during the time of the swine flu last year were raised periodically in proportion to the public opinion of swine flu. They were raised from the current price of \$20 to \$50, \$60, and finally, at the height of media attention 16 months ago, to \$70 (“Amazon.com: Customer Reviews” 1). Upon looking at other masks, I saw that this trend was apparent: “These masks will do next to nothing to prevent you from GETTING swine flu. It may reduce your ability to give it to others, however. You should know that only a couple days ago these SAME masks were 19.95 or cheaper for a box of 20. They are taking unfair advantage of the panic! If you are unsure about what I said about the effectiveness of the masks, please do just a few minutes of research. To get true virus protection you need a special filter that protects you against particles .3 microns in size. A virus would go through this mask like water through your spaghetti strainer. There is a reason that professionals working with viruses where those HUGE suits and have those masks that cover their whole face with a large cylinder filter over the mouth because that is what you need to protect yourself against a flu virus. Don't support those that take advantage of others” (“Amazon.com: Customer

Reviews” 1). The reviewer above says it all, and at the same time concurs with the previously mentioned reviewer about the size of viral particles. There has been obvious price gouging apparent here, blatantly manifest in more than one seller. A bird flu believer may weakly deny the claim, but the truth remains inscribed into the vast internet forever. Regardless of if bird flu is a threat, the media stands to gain from unnecessarily advertising the pandemic threat that has multitudes of people scared today. Thus, it is very possible that bird flu could have been portrayed as hazardous in a false matter as a result of the financial interests of the media.

On the contrary to the retrospect adopted above, there are a vast multitude of people that believe bird flu is an imminent threat and will soon cause a pandemic that will kill millions of people around the world. They too, present many valid points that support their claim, which include various studies that suggest bird flu is a threat as well as a proposed genetic cycle of pandemics in the history of our civilization. An example of a study that concludes bird flu is an imminent threat includes that of various hybridizations of bird flu with seasonal flu strains. That is, when combined, various strains of the hybrid virus exhibited characteristics that rendered them extremely pathogenic to humans, more so than their original counterparts: “Some hybrids between H5N1 virus and seasonal influenza viruses were more pathogenic than the original H5N1 viruses. That is worrisome” (“Virus Hybridization Could Create Pandemic Bird Flu” 1). This study presents startling possibilities. The fact that bird flu can metamorphose into an even more pathogenic form just by being in contact with a seasonal flu strain, which is ubiquitous during its peak, means that there is a very real possibility that the bird flu can in fact become even more lethal than it is now. These lab results exemplify what could possibly

happen, or what may have already happened, when bird flu comes into contact with seasonal flu and hybridizes. A prime incubation center for this hybridization would be in the human body. A very easy way for the bird flu to come into contact with a seasonal flu would be to infect a person that has been exposed to it, who number in the millions. From there the same situation in the lab would be created, except this time with terrifying consequences. Even if the bird flu is hard to transfer, the fact that it can easily become exponentially more lethal than it already is represents a characteristic that enables it to have the capacity to become the next world pandemic.

In addition to the highly pathogenic nature of bird flu, scientists claim that the world undergoes a genetic cycle of pandemics. That is, just like there is a cycle of seasons, there is a cycle of pathogenic diseases that periodically kill off vast quantities of people. To support the aforementioned claim, scientists cite the various pandemics that have occurred over the course of the existence of civilization, with special attention given to recent pandemics. A prime example of the type of pandemic scientists are expecting is that of the Spanish flu of 1918, also known as influenza. The Spanish flu of 1918 is one of the deadliest events to occur in all of human history, decimating half of the world population, 20 to 40 million people ("Pandemics Timeline" 1). This debacle occurred in 1918, and was hoped to be the only pandemic the world would ever experience. Unfortunately, all hopes were shattered when yet another pandemic struck the world in 1957, the Asian flu. It is said that 35 percent of the world population contracted it ("Pandemics Timeline" 1). It was starting to become apparent to people that the world would not witness a sole pandemic. This assertion was grievously affirmed with the onset of the Hong Kong flu, which occurred in 1968 and killed a staggering 700,000 people

("Pandemics Timeline" 1). The world did not see another outbreak until 1997, with the advent of a minor avian influenza, but this still was not qualified as a major pandemic ("Pandemics Timeline" 1). When chronologically analyzed, one can infer that the world has not yet experienced a major pandemic in accordance with the pattern mentioned above. That is, on average every 40-50 years the world experiences a major pandemic that results in a major loss of life, and our current generation has yet to experience one. The last major pandemic was in 1968, and it's been over 40 years, just the right time for another major pandemic to occur in accordance with the trends of past events. Scientifically, there is no evidence that supports this claim. However, in their defense, it seems fair to point out that there is also no evidence to suggest that this trend has been eradicated. On the contrary, scientists use this retrospect of pure logic to denote that the world is in fact due for a pandemic, utilizing the simple but convincing argument of the pattern shown above.

In an attempt to further clarify the enigma of the bird flu, I utilized my own observation techniques, primarily that of surveys. In my surveys, I asked various questions regarding the emergence of bird flu panic as well as the public opinion on the issues discussed above. For example, my first question asked about when most people heard about avian influenza. Out of 24 people surveyed, 12, or 50 %, stated that they heard about influenza about 2-3 years ago. This was when the media was all over bird flu. In addition, when asked if 2-3 years ago, people thought that bird flu was a serious threat, 30 % admitted yes, with another 30 % stating possibly. However, when asked if they thought bird flu was a threat now, 57% stated no, with an insignificant 13 % stating that it still was. The above mentioned survey results demonstrate a vital component to the



understanding of media influence on the general populace. In concurrence with the survey results, one can infer that the media represents a massive influence on people, by noticing that 2-3 years ago, when media attention to bird flu was at its height, 30 % of people were worried, with another 30 % in the middle ground. However, after media attention subsided, or now, only 13 % stated they thought bird flu was a threat, with 57 % stating that it was not a threat. The fear of bird flu in direct proportion to the amount of media attention shows that the media controls public opinion to a significant extent. Therefore, it is blatantly manifest that there could be a media conspiracy in conjunction with various retailers on the subject of public opinion and product sales, as mentioned above.

Other questions in the survey included opinion about government response capability and about the likelihood of a pandemic in general. The results to these questions were unsurprising, given the proven media link with public opinion. When asked if government facilities had the capacity to handle a pandemic attack, 50 % responded they were unsure, and 30 % adamantly refused. This result was expected because with all the media attention, an obvious impact has been left on the population, one that may be irreparable. In addition, 52% responded that the world was due for a pandemic, in concurrence with the genetic cycle model proposed earlier.

Thus, the various arguments surrounding the ardent contention of bird flu have been revealed and thoroughly analyzed. Upon doing so, the various points regarding both the inevitability or the impossibility of bird flu have been evaluated. It seems that, in regard to the impossibility of bird flu, critics bring up a valid point that the viral particles reside in a region of the respiratory tract that makes transmission difficult at the least.

Therefore, the transmission of bird flu, at least for now, is not a subject of worry. In addition, within my own research, I found that the media does stand to gain by advertising bird flu as an imminent pandemic, and with my surveys proved the link between media influence and public opinion. I found various products and negative rebukes on their sellers for utilizing the bird flu panic to raise their prices. In fact, given the above information, I saw the possibility of a media conspiracy in conjunction with various sellers in an attempt to elicit an illegal financial proliferation. However, on the contrary, I also saw various arguments that strongly supported the claim that the bird flu threat is real. For example, various studies that suggested the highly pathogenic capability of a different, cross hybridized strain of bird flu startled me. The fact that if bird flu were to incubate in a person already exposed to seasonal influenza to become even more deadly represents a grave threat in itself, even if it cannot be transmitted easily. In addition, I found myself quite amicable to the idea of a genetic cycle of pandemics, for various reasons. These included the fact that a pattern of pandemics was prevalent, given previous events. Also, even though there is no scientific evidence to support this claim, there is also no scientific evidence to deter it. That is, there is no reason that this trend should not continue and a pandemic should not occur.

In researching the likelihood of bird flu as a catastrophic pandemic versus a media hoax, I have arrived at a conclusion that settles in a middle grounds between the two extremities of this subject of vehement contention. The likelihood of a pandemic is, at least to me, inevitable. Throughout the history of human civilization, pandemics have occurred and periodically killed off multitudes of people, especially in recent decades. I don't believe that medical advances have eliminated concern for pandemics and that the

cycle continues. There is a bomb ticking ubiquitously, yet at the same time, invisibly. Avian influenza may or may not be the potential candidate for the next global pandemic. Whether or not the next pandemic will be the avian influenza stands to be decided by the test of time; but one fact is for certain. There is an imminent threat lurking in the corners of the Earth, waiting for the right time to strike, and pretty soon, the world will experience a catastrophe on a scale never before seen. In our extremely mobile world, the containment of such a pandemic will be impossible. The viral particles will spread like ripples in water across the earth and infect a vast majority of the population, killing almost everyone. Nature, as man's best friend, is also man's worst enemy.

#### Works Cited

- "Amazon.com: Customer Reviews" *Amazon.com: Online Shopping for Electronics, Apparel, Computers, Books, DVDs & More*. 05 Jan. 2009. Web. 16 May 2010.  
<[http://www.amazon.com/3M-RESPIRATOR-SURGICAL-MASK-BIRD/product-reviews/B000BZ57SO/ref=dp\\_db\\_cm\\_cr\\_acr\\_txt?ie=UTF8&showViewpoints=1](http://www.amazon.com/3M-RESPIRATOR-SURGICAL-MASK-BIRD/product-reviews/B000BZ57SO/ref=dp_db_cm_cr_acr_txt?ie=UTF8&showViewpoints=1)>.
- Chadwick, Alex. "Study: Human-to-Human Bird Flu Transmission Rare : NPR" *NPR : National Public Radio : News & Analysis, World, US, Music & Arts : NPR*. 23 Mar. 2006. Web. 16 May 2010.  
<<http://www.npr.org/templates/story/story.php?storyId=5297299>>.

- "The Flawed 1976 National Swine Flu Influenza Immunization Program" *SEMP: Evidence-based Disaster Management: Preparedness, Response, Recovery, and Mitigation*. 22 Feb. 2005. Web. 16 May 2010.  
<[http://www.semp.us/publications/biot\\_reader.php?BiotID=177](http://www.semp.us/publications/biot_reader.php?BiotID=177)>.
- "Human-to-Human Bird Flu Transmission Unlikely" *China.org.cn*. 10 Dec. 2007. Web. 16 May 2010. <<http://www.china.org.cn/english/health/234990.htm>>.
- "Pandemics Timeline." *Guardian.co.uk*. 2 Apr. 2003. Web. 16 May 2010.  
<<http://www.guardian.co.uk/society/2003/apr/02/health.lifeandhealth>>.
- Thompson, J. "Bird Flu Origins" *Bird Flu - Bird Flu Symptoms - Avian Influenza*. 15 Jan. 2005. Web. 16 May 2010. <<http://www.avianinfluenza.org/bird-flu-origins.php>>.
- "Virus Hybridization Could Create Pandemic Bird Flu" *Science Daily: News & Articles in Science, Health, Environment & Technology*. 24 Feb. 2010. Web. 16 May 2010. <<http://www.sciencedaily.com/releases/2010/02/100222161841.htm>>.