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ARTICLES

How Much Are My Cells Worth? Henrietta
Lacks and the HeLa Cell Line

Elizabeth Bley
The Ohio State University

Untold Stories: An Analysis of Sexual Assault
Data, Crime, and Punishment

Ariana Aboulafia
The University of Southern California

Political Psychology and Identity of
Cambodians

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Imitation is the Sincerest Form of Flattery:
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The Undergraduate Law Review at The Ohio State University was created with the intent of giving undergraduate students the opportunity to have their work published in a journal edited by fellow students. We hope to give undergraduate students an outlet through which they can discuss and consider a variety of important legal issues. In addition, it is our hope that we can publish articles that are accessible to a wide audience and that encourage critical thinking, so as to reach many and inspire change.

HOW MUCH ARE MY CELLS WORTH?
HENRIETTA LACKS AND THE HELA CELL LINE

Elizabeth M. Bley^{1*}

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Introduction

Research on human samples is central to advances in medicine, and without research on human tissues many advances such as the polio vaccine, advances in chemotherapy, gene mapping, and in vitro fertilization would never have been possible.² Often, cells and tissues are collected during routine medical procedures, such as a biopsy, but following the use of the cells and tissues for their intended purpose, many are stored for later use in research. With this great development comes many conflicts. This research has the potential to result in large sums of money for the researchers, but the individual that the tissue was removed from never sees a penny and is often unaware that their tissues and cells were even used for research in the first place. At the heart of this issue is the question of whether or not individuals should be entitled to a portion of the profits from research conducted on their tissues and samples.

These questions were recently brought to public attention through Rebecca Skloot's novel, *The Immortal Life of Henrietta Lacks*. This novel looks into not only the life of Henrietta Lacks, but also the life of her cells after her death and how the existence of the HeLa cell line has affected her family. For over 20 years, the family did not even know that Henrietta's cells were being used for research. They still have not seen any portion of the profits from the sale of Henrietta's cells even though the family was living in poverty.³ It goes without question that the Lacks family and Henrietta should have been provided more information about the use of her cells in research, but should they also have received a part of the large profits that were made as a result of the cells?

The current belief by the courts is that an individual does not have a property interest in their cells, tissues, and organs once they have been removed from their body; this also means that an individual does not have a right to any of the profits made from the use of their cells, tissues, and organs in medical research.⁴ It is time for a change. Individuals have a right to their cells, tissues, and organs whether they are a part of them or have been removed, and individuals should

² Skloot, Rebecca. *The Immortal Life of Henrietta Lacks*. New York: Crown, 2010.

³ Skloot, Rebecca. *The Immortal Life of Henrietta Lacks*. New York: Crown, 2010.

⁴ Moore v. The Regents of the University of California. "OneLBriefs." *Moore v. The Regents of University of California Case Brief*. Web. 19 Nov. 2013. <http://www.onebriefs.com/cases/property/moore_regents.htm>.

have the right to share in profits that come from the use of the cells, tissues, and organs in medical research.

I. History

A. Human Tissues in Medical Research

Humans have long been curious about the human body. The first documented use of human cadavers for anatomical research occurred in the fourth century BC.⁵ Leonardo da Vinci made anatomical drawings of cadavers in the late 15th century in order to study the skeletal, muscular, and vascular systems.⁶ In 1752, the Murder Act was passed; this act allowed the bodies of executed murderers to be dissected for anatomical research.⁷ Even with the Murder Act, the supply of cadavers was much less than the demand. The Anatomy Act of 1832 was passed, which increased the supply of cadavers for medical dissection.⁸

The first documented example of human tissue used for research was in 1858 when Rudolf Virchow proposed a cellular basis for disease.⁹ Virchow is credited with launching the field of cellular pathology, which could not have been accomplished without the use of human tissue samples.¹⁰ Cellular pathology involves examining cells and tissues of the body in order to look for the cause of disease and illness.¹¹

Cell culture—the process of growing cells under controlled conditions, typically for research purposes—has also been a valuable development for medical research.¹² The first tissue culture laboratory was founded in 1912 in Cambridge England.¹³

⁵ "History of Anatomy." *Peak Research Institute LLC RSS*. Web. 19 Nov. 2013. <<http://www.peakri.com/history-of-anatomy/>>. In the 4th century BC, Herophilus and Erasistratus performed dissections on executed criminals in Alexandria.

⁶ "History of Anatomy." *Peak Research Institute LLC RSS*. Web. 19 Nov. 2013. <<http://www.peakri.com/history-of-anatomy/>>. These drawing were done in secret because dissecting human cadavers was prohibited in much of Europe until the 16th century.

⁷ "History of Anatomy." *Peak Research Institute LLC RSS*. Web. 19 Nov. 2013. <<http://www.peakri.com/history-of-anatomy/>>.

⁸ "History of Anatomy." *Peak Research Institute LLC RSS*. Web. 19 Nov. 2013. <<http://www.peakri.com/history-of-anatomy/>>.

⁹ Hakimian R, Korn D. Ownership and use of tissue specimens for research. *JAMA*. 2004 Nov 24;292(20):2500-5.

¹⁰ Schultz, M. Emerging Infectious Disease. Rudolf Virchow. 2008 Sept. Available from <http://wwwnc.cdc.gov/eid/article/14/9/08-6672.htm>. Virchow's major accomplishment was his observation that whole organisms do not get sick, only certain cells or certain groups of cells become diseased.

¹¹ "Cellular Pathology." *Imperial College Healthcare NHS*. Web. 6 July. 2015. <<http://www.imperial.nhs.uk/services/pathology/cellularpathology/index.htm>>.

¹² Cell culture is the growth of cells in an environment external of the body often using media to provide the proper nutrients to the cells.

¹³ Andrews L, Nelkin D. *Whose Body is it Anyway? Disputes over body tissue is a biotechnology age*. *THE LANCET*. 3 Jan, 1998. 351: 53-57.

The world of cell culture was shocked by the growth of the first immortal cell line in 1951; these were the HeLa cell line that came from the cells of Henrietta's cervical tumor.¹⁴ These cells represented the first time that cells grown in culture were able to survive outside of the human body. Previously, cells grown outside of the human body quickly died, and therefore they were not practical for research purposes. Cell culture continued to be of great importance to medical research and today it is a standard procedure in most medical research laboratories. It is used for many purposes, ranging from the study of metabolism and cancer to the effects of drugs and toxic compounds on cells.¹⁵ It is used in drug screening as well as in the development of vaccines and medicine.¹⁶ The possible uses of cell culture are limitless, and without cell culture, most of the medical discoveries to date would have been impossible.

B. *Value of the Human Body*

Humanity has long recognized the importance of the human body. Not only is it essential for life, but there is also a certain level of dignity and respect that people morally expect to be given to the body. For example, not only are there laws and customs that protect the living body from physical harm, but there are also laws that protect the dignity of the body of deceased individuals. In Ohio, for example, there are laws prohibiting the "desecration or abuse of a corpse."¹⁷

There is also a related class of thought in which the commercial value of the human body is also recognized. In this view, not only is the human body valuable or worthy of dignity in some abstract sense, it is also viewed as economically, or commercially, valuable. Today, websites even exist to calculate the value of an individual's cadaver.¹⁸ According to *Discovery News*, a person is worth more dead than alive; a pair of eyeballs sells on the black market for \$1,525, a heart for \$119,000, and a liver for \$157,000.¹⁹

¹⁴ "What Is Cell Culture? - Cell Culture - Research Services - Coriell Institute for Medical Research." *What Is Cell Culture? - Cell Culture - Research Services - Coriell Institute for Medical Research*. Web. 19 Nov. 2013. <<http://www.coriell.org/research-services/cell-culture/what-is-cell-culture>>.

¹⁵ "Introduction to Cell Culture." *Life Technologies*. Web. 6 July 2015. <<http://www.lifetechnologies.com/us/en/home/references/gibco-cell-culture-basics/introduction-to-cell-culture.html>>.

¹⁶ "Introduction to Cell Culture." *Life Technologies*. Web. 19 Nov. 2013. <<http://www.lifetechnologies.com/us/en/home/references/gibco-cell-culture-basics/introduction-to-cell-culture.html>>.

¹⁷ Ohio Rev. Code § 2927.01. The Ohio Revised Code forbids the treatment of a corpse in the way that would outrage reasonable family sensibilities (abuse of a corpse a misdemeanor of the second degree), or that would outrage reasonable community sensibilities (gross abuse of a corpse a felony of the fifth degree).

¹⁸ <http://www.cadaverforsale.com/>.

¹⁹

<http://news.discovery.com/human/life/your-body-part-price-list-youre-worth-more-dead-than-alive-infographic.htm>

Although the sale of organs is illegal²⁰, there are legal ways to sell certain parts of the human body while living. The sale of sperm and eggs is perhaps the best example of a legal way in which individuals can profit from parts of their body. Sperm donors are commonly given about \$100 per sample, and egg donors often receive around \$5,000 dollars.²¹ These practices suggest that there is recognition that human bodies have monetary value that people can profit off of.

II. *Henrietta Lacks*

The novel *The Immortal Life of Henrietta Lacks* was written by Rebecca Skloot and published in 2010.²² This novel exemplifies some of the practical and theoretical problems that arise over the value of cells removed from a human body and also addresses the issue of cell ownership.

A. *Life*²³

Henrietta was born in Roanoke, Virginia on August 1, 1920. Following the death of her mother in 1924, Henrietta was raised by her grandfather in Clover, Virginia. She worked on the family tobacco farm and only received an education through the sixth grade. She had her first child shortly after turning fourteen years old, and her second four years later. Henrietta married Day Lacks on April 10, 1941 when she was 20 years old.

On January 29, 1951, at the age of 30, Henrietta went with her husband to Johns Hopkins Hospital complaining of having "a knot on her womb." Upon examination, the doctor identified a hard mass on her cervix, and he cut a small sample to send to the pathology lab for a diagnosis. On February 5, 1951, the doctor from Johns Hopkins called informing Henrietta that the mass was malignant and that she needed to return for treatment. Henrietta returned to Hopkins the next day for treatment. After signing a consent form solely for the operation and treatment of the tumor, Henrietta underwent surgery. However, after the anesthesia had been administered but before the surgery began, a doctor removed two pieces of tissue from her cervix—one from the healthy tissue and one from the tumor. The tissue samples were then given to Dr. George Gey.²⁴

²⁰ This is not to say that it does not happen. The sale of body parts and organs is commonplace on the black market.

²¹ Keen, Judy. "Sperm, Egg Donors Increase during Recession - USATODAY.com." *Sperm, Egg Donors Increase during Recession - USATODAY.com*. USA Today. Web. 19 Nov. 2013. <http://usatoday30.usatoday.com/news/offbeat/2009-07-06-donations_N.htm>.

²² "Rebecca Skloot Journalist, Teacher, Author of *The Immortal Life of Henrietta Lacks*." Rebecca Skloot *The Immortal Life* Comments. Web. 6 July 2015. <<http://rebeccaskloot.com/the-immortal-life/>>.

²³ Skloot, Rebecca. *The Immortal Life of Henrietta Lacks*. New York: Crown, 2010. This book has spent over 125 weeks on the New York Times Best Seller List

²⁴ "The George O. Gey Collection." *Medical Archives*. Johns Hopkins Medical Institute. Web. 18 Nov. 2013. Dr. Gey was the director of the Finney-Howell Cancer Research Laboratory. He is credited with being the first person to culture cells from human tissues. Along with his wife Margaret he worked to not only culture human

Dr. Gey had worked to culture human cells before, but he had not had any success. Much to his surprise, however, Henrietta's cells continued to not only grow but also to multiply; the cells were named HeLa after Henrietta Lacks. Henrietta was never told that the sample had been removed, nor that her cells were continuing to grow and divide.

About a month and a half after her initial treatment, Henrietta was ready to begin the X-ray therapy stage of her treatment. The treatment took its toll on her; she began to feel sick and it seemed as if the radiation was burning her skin. Meanwhile, Dr. Gey was spreading word of the success of growing the HeLa cells in culture; he began to distribute them to any researcher who requested them. Henrietta's condition was worsening, and it was found that tumors were present throughout her entire abdomen. On August 8, 1951, Henrietta returned to the hospital and this time requested to be admitted. Once again without her consent, additional cell samples were removed from her cervix. New tumors were appearing daily, and they were no longer contained to her abdomen. She was in an immense amount of pain. When September came, Henrietta's entire body was covered with tumors, and her kidneys were failing. On October 4, 1951, after fighting an incredibly painful battle with cancer, Henrietta passed away.

Upon receiving word of Henrietta's death, Dr. Gey requested that an autopsy be performed. Although there were no laws prohibiting removing tissue without consent from a living patient, the law did require consent to remove tissue from a deceased individual.²⁵ Henrietta's husband initially denied this consent, but he relented after the doctors said the autopsy may provide information that would help his children; no one asked about removing tissues from Henrietta's body and no one informed her family. It wasn't until over 20 years later that Henrietta's family found out that her cells had been taken and that they were alive in research labs throughout the entire world.

Moreover, even though the scientific community knew that HeLa cells were from Henrietta Lacks, it was not until 45 years after her death that Henrietta and her family were honored for their contribution to science. The ceremony occurred at Morehouse College School of Medicine in Atlanta, and it was declared that October 11th would be known as Henrietta Lacks Day.²⁶ This recognition was a far cry from what Henrietta's family truly deserved. Following Rebecca Skloot's publication of her novel *The Immortal Life of Henrietta Lacks*, she created The Henrietta Lacks Foundation. "The Foundation's goal is to continue to help the Lacks family as well as others with similar needs who may qualify, such as family members and descendants of research subjects used in the famous Tuskegee Syphilis Studies, those injected with sexually transmitted diseases without their knowledge by the US Government, and others. To qualify for a grant in any of the eligible categories, an applicant must prove financial need and have made, or be the

cells, but also to standardize the care of these cells, and to identify the ideal culture medium to grow the cells in. He was the founder and the first president of the Tissue Culture Association.

²⁵ It is interesting to note that even in 1951 the need for permission to remove tissue from the dead was required, why then was the same requirement not extended to those patients still living?

²⁶ *Cancer Cell Research: The Way of All Flesh*. Dir. Adam Curtis. CTE Carlton, 1997. Online Documentary.

family member or descendant of someone who has made, a significant contribution to scientific research as a research subject without personal benefit, including those who have unwillingly or unknowingly been used in research or contributed biological materials for research."²⁷

B. *The Use of Her Cells in Research*

*"Not long after Henrietta's death, planning began for a HeLa factory—a massive operation that would grow to produce trillions of HeLa cells each week. It was built for one reason: to stop polio."*²⁸

The first use of Henrietta's cells to cause a major change in the medical field was the production of the polio vaccine.²⁹ To create the vaccine, it was necessary to have a large supply of cells that had been infected with the virus. Prior to the creation of HeLa, these experiments could only be conducted on animal cells. With the creation of HeLa cells, however, it became possible to conduct this research using a human cell line.³⁰ The Lacks family was never asked for permission to do this research. The HeLa cell line has been used in countless other research experiments as well, but all of this was done without the consent of the family. The Lacks family has also never received any portion of the profits from the sale of the cells.³¹

The exploitation of the Lacks family did not stop there. In 1973, researchers called Henrietta's husband requesting to take blood samples from him and his children in order to further research the HeLa cell line involving a genetic marker test. The Lacks family was under the impression that the researchers were coming to do some sort of cancer test on them. No one made sure that the family understood what the researchers were trying to explain. The researchers took the blood samples, and for days Henrietta's daughter, Deborah, tried to call Johns Hopkins in order to obtain the results to her "cancer test," but no one seemed to know what she was talking about. The researchers even requested that she come into the hospital to give even more samples to be used in research, and Deborah was still under the impression that the

²⁷ "About The Henrietta Lacks Foundation." *Henrietta Lacks Foundation Main Comments*. Web. 20 Nov. 2013. <<http://henrietalacksfoundation.org/>>. This foundation was created in 2010 following the publication of Skloot's novel as a way to give back to the family. It was also part of Skloot's promise to Henrietta's daughter, Deborah when she was working with her in order to write the novel.

²⁸ Skloot, Rebecca. *The Immortal Life of Henrietta Lacks*. New York: Crown, 2010. Quote from page 93.

²⁹ "Polio." *The University of Maryland*. Web. 18 Nov. 2013.

³⁰ "Early Tissue and Cell Culture in Vaccine Development." *History of Vaccines RSS*. Web. 19 Nov. 2013.

³¹ "Quick Guide to HeLa Cells | Wellcome Trust." *Quick Guide to HeLa Cells | Wellcome Trust*. Web. 18 Nov. 2013. <<http://www.wellcome.ac.uk/Education-resources/Education-and-learning/Big-Picture/All-issues/The-Cell/WTDV030785.htm>>. Henrietta's cells have gone to space for research, and they have been used in research involving nuclear testing and toxins. The cells have been essential in understanding cancer, HIV/AIDS, testing anti-tumor medicines, and research into understanding cells as a whole.

researchers were testing her for the cancer from which Henrietta had died. The family never knew that they too were being used as part of the research involving the HeLa cells.³²

Today, the HeLa cell line is used most in biomedical research³³, and a vial of typical HeLa can now be purchased from *Invitrogen* for approximately \$250.³⁴ In March of 2013, a German research group lead by Lars Steinmetz at the European Molecular Biology Laboratory in Heidelberg, Germany sequenced the entire HeLa genome, and published the data without asking for permission from the Lacks family.³⁵ The data contained in the HeLa genome give very personal information about the Lacks family including their potential risk for various diseases.³⁶ Almost immediately after being released to the public, the data was removed due to the violation of the Lacks family's privacy. The Lacks family and the National Institute of Health have reached an agreement to allow a restricted use of the HeLa cell genome. This agreement requires that any future publications that use the data must acknowledge the contribution of Henrietta and her family. The access to the HeLa genome will be restricted and not available to the public.³⁷ Although this agreement was made to allow Henrietta and her family to receive credit for their contributions and to have some control in what research is conducted, it is a world away from providing the family with the compensation they deserve for the use of Henrietta's cells

III. Value of the HeLa Cell Line

A. *How Much is the HeLa Cell Line Worth?*

One scientist, Dr. Leonard Hayflick, estimates that if you weighed all of the HeLa cells that have ever been in existence, the weight would be over 50 million metric tons.³⁸ Another scientist estimated that if all of the HeLa cells ever grown were laid end to end, they would wrap

³² Skloot, Rebecca. *The Immortal Life of Henrietta Lacks*. New York: Crown, 2010.

³³ Collins, Francis. "HeLa Cells: A New Chapter in An Enduring Story." *NIH Directors Blog*. National Institute of Health, 7 Aug. 2013. Web. 19 Nov. 2013. <<http://directorsblog.nih.gov/2013/08/07/hela-cells-a-new-chapter-in-an-enduring-story/>>. Over 74,000 scientific publications refer to HeLa cells.

³⁴ <http://www.lifetechnologies.com/>. Different varieties of HeLa cells can sell for as much as \$10,000.

³⁵ Gelling, Cristy. "HeLa Genome Offers Clues to Cells' Cancerous Nature." *Science News*. Web. 19 Nov. 2013. <<https://www.sciencenews.org/article/hela-genome-offers-clues-cells'-cancerous-nature>>.

³⁶ Collins, Francis. "HeLa Cells: A New Chapter in An Enduring Story." *NIH Directors Blog*. National Institute of Health, 7 Aug. 2013. Web. 19 Nov. 2013. <<http://directorsblog.nih.gov/2013/08/07/hela-cells-a-new-chapter-in-an-enduring-story/>>.

³⁷ Gelling, Cristy. "HeLa Genome Offers Clues to Cells' Cancerous Nature." *Science News*. Web. 19 Nov. 2013. <<https://www.sciencenews.org/article/hela-genome-offers-clues-cells'-cancerous-nature>>. The body that will determine the access to the genome will consist of physicians, researchers, and most importantly members of the Lacks family.

³⁸ Skloot, Rebecca. *The Immortal Life of Henrietta Lacks*. New York: Crown, 2010. According to <http://bionumbers.hms.harvard.edu/bionumber.aspx?s=n&id=103721>, the average weight of one HeLa cell is 2.29 nanograms.

around the earth at least three times.³⁹ In order to estimate the worth of the HeLa cell line, it is first necessary to calculate the number of cells in existence. From the Dr. Hayflick's estimate, there have been 50 million metric tons of HeLa cells ever in existence. Knowing the average weight of one HeLa cell to be 2.29 nanograms⁴⁰, the total number of cells can be calculated.

$$50,000,000 \text{ metric tons of HeLa cells} \times \frac{1 \times 10^{15} \text{ nanograms}}{1 \text{ metric ton}} \times \frac{1 \text{ HeLa Cell}}{2.29 \text{ nanograms}} = 2.183 \times 10^{22} \text{ HeLa Cells}$$

(21,830,000,000,000,000,000,000 cells)

In order to gain a better estimate, the other scientist's estimate over placing HeLa cells end to end 3 times around the earth was also calculated. Knowing the average diameter of one HeLa cell to be 21 micrometers, and the circumference of the earth to be 40,075 kilometers⁴¹, the total number of cells from this estimate can be calculated.⁴²

$$3 \times 40,075 \text{ kilometers} \times \frac{1 \times 10^3 \text{ micrometer}}{1 \text{ kilometer}} \times \frac{1 \text{ HeLa cell}}{21 \text{ micrometer}} = 5.725 \times 10^{12} \text{ HeLa Cells}$$

(5,725,000,000,000 cells)

Due to the fact that both of these were estimates by different scientists and it will probably be impossible to ever know exactly how many HeLa cells have ever been in existence, the average of the two estimates will be taken.

$$\frac{2.183 \times 10^{22} \text{ HeLa Cells} + 5.725 \times 10^{12} \text{ HeLa Cells}}{2} = 1.0915 \times 10^{22} \text{ HeLa Cells}$$

(10,915,000,000,000,000,000,000 cells)

This leads to the estimate that as of the publication of Skloot's novel in 2010, 1.0915×10^{22} HeLa cells have been produced, and this number grows every day.

Next, is a matter of examining how much HeLa cells have been sold for throughout history. In the very beginning, Dr. Gey gave out samples of HeLa cells to other researchers.

³⁹ Skloot, Rebecca. *The Immortal Life of Henrietta Lacks*. New York: Crown, 2010. According to <http://bionumbers.hms.harvard.edu/bionumber.aspx?s=n&id=103788&ver=4>, the average radius of one HeLa cell is 10.5 micrometers.

⁴⁰ Milo et al. *Nucl. Acids Res.* (2010) 38: D750-D753. ID 103721

⁴¹ https://www.google.com/search?q=circumference+of+the+earth&rlz=1C1CHFX_enUS483US483&oq=circumference+of&aqs=chrome.69i59j69i57j0l4.3594j0j7&sourceid=chrome&espv=210&es_sm=122&ie=UTF-8.

⁴² Milo et al. *Nucl. Acids Res.* (2010) 38: D750-D753. ID 103788

Around 1952, a factory was built at Tuskegee to mass produce HeLa cells. This factory sold the cells for \$10 per vial plus Air Express fees.⁴³ Microbiological Associates was created in 1956, and it was the beginning of the multibillion dollar industry involving the sale of biological materials; they sold vials of HeLa cells for less than \$50 per vial.^{44 45}

Today, basic HeLa cells can be purchased from *Sigma Aldrich* for \$477.50 a vial and there are 25 HeLa cell line derivatives that range in price from \$356.50-\$593.00 for a single vial.⁴⁶ From *Invitrogen*, a basic vial of cells is \$258.00, and their 6 derivatives range in price from \$9,949 to up to \$10,250.00 for a single vial of cells.⁴⁷ *The American Type Culture Collection* sells HeLa cells from \$431.00 to \$551.00 a vial.⁴⁸

Calculating the value of the HeLa cell line is practically impossible because the cells are priceless. Almost every single advance in medicine from chemotherapy to vaccines has been tested on HeLa cells. The standards of cell culture were established using HeLa cells. HeLa cells have been instrumental in almost every scientific advancement. As of 2009, over 600,000 scientific articles had been published using HeLa cells and this number is estimated to increase at a rate of 300 papers a month. The amount of HeLa cells that have been used is enormous, and this number is constantly growing as more and more cells grow and divide each day.

B. *Should the Lacks Family Receive Compensation?*

Whether or not individuals are entitled to a portion of the profits gained from the use of their cells and tissues in medical research is a popular question in today's society. On a surface level examination, the law does not appear to grant complete property rights to individuals in regard to cells and tissues taken from their body. Ethical considerations, on the other hand, recognize the importance of involving the individual from whom the samples were taken during the research process. In taking together the legal and ethical considerations, it is time for a change, and the development of a framework to allow for the use of individual's cells and tissues in research while still protecting the donor. Recognizing the need for change, the Lacks family should be entitled to a portion of the profits that have come as a result of the use of the HeLa cell line.

1. Jurisprudence

The issue of property interest in an individual's cells and tissues that have been removed from their body was first addressed by the courts in 1990. In the case of *Moore v. Regents of*

⁴³ Skloot, Rebecca. *The Immortal Life of Henrietta Lacks*. New York: Crown, 2010.

⁴⁴ Skloot, Rebecca. *The Immortal Life of Henrietta Lacks*. New York: Crown, 2010.

⁴⁵ <http://www.microbioassociates.com/>

⁴⁶ <http://www.sigmaaldrich.com/>

⁴⁷ <http://www.lifetechnologies.com/>

⁴⁸ <http://www.atcc.org/>

University of California, it was held that a patient did not have a property interest in tissue that had been removed from their body.⁴⁹ In 2003, the issue of property interests in cells and tissues removed from an individual's body was again addressed. In the case of *Greenberg v. Miami Children's Hospital Research Institute*, it was held that patients do not have a property interest in tissues voluntarily donated for medical research.⁵⁰ In 2004, the idea of a property interest in tissues and cells removed from the body was again tested in *Havasupai Tribe v. Arizona State University*, which was settled out of court with the University Board of Regents agreeing to pay the plaintiff \$700,000.⁵¹ The most recent case, *Belano v. Texas*, occurred in 2009. In the case of *Beleno*, the defense again settled out of court and the state destroyed all blood samples.⁵²

The only actual decision that was settled in court involving the use of tissues and cells for research without consent was the Moore case of 1990. More recent cases have been settled out of court, but they have resulted in money for the plaintiffs whose samples were used or the destruction of the samples. These results from recent cases seem to indicate that medical research institutions might be losing confidence that courts will rule in their favor. While the judiciary's current position is unclear, there is some reason to think that courts might rule in favor of someone like Henrietta.

2. Ethical Considerations

⁴⁹ *Moore v. Regents of University of California*. Supreme Court of California (1990), 51 Cal.3d 120, 793 P.2d 479, 271 Cal.Rptr. 146. This was decided by the Supreme Court of California on July 9, 1990. Plaintiff John Moore was treated for hairy cell leukemia at UCLA Medical Center by Dr. Golde. As a result of the cancer, Moore's spleen was removed and other samples of blood, and bone marrow were taken. Following the removal of Moore's spleen samples were taken and used for research. Under Dr. Golde's direction, Moore returned several times between 1976-1983 for further treatment. At these visits additional samples were taken, and again used for research. Moore never gave consent for the research to occur on his cells and tissues. In 1979, Dr. Golde established a cell line from Moore's cells, and in 1981 applied for a patent. Plans were also made to commercialize the cell line. Under the agreement with Genetics Institute, Dr. Golde was a paid consultant and received 75,000 shares of stocks; they also agreed to pay Dr. Golde and Regents at least \$330,000 over three years. Moore filed for a cause of action in conversion, a tort that protects against interference with possessory and ownership interests in personal property. The court held that Moore did not have a property interest in the cells removed from his body, and therefore did not have the right to share in the profits from the commercialization of products derived from his cells.

⁵⁰ *Greenberg v. Miami Children's Hospital Research Institute* (2003), 264 F.Supp.2d 1064, 121 A.L.R.5th 687, 16 Fla. L. Weekly Fed. D 417. Plaintiffs were parents of children with Canavan disease, a rare genetic disease. Dr. Matalon received tissue samples from these children and used them to patent the Canavan gene sequence. Next he commercialized a genetic screening test for the disease. At the time of the filing of the case he had made over \$75,000. While citing the Moore case the courts held that a property interest does not exist in donated cells and tissues.

⁵¹ *Havasupai Tribe v. Arizona State University*. Case no. CV2005-013190. Superior Court of Arizona. In 1989, The Havasupai Tribe asked researchers from Arizona State University to aid them in uncovering the root to a diabetes epidemic that seemed to be striking their tribe. Thinking the link may be genetic blood samples were taken. After failing to establish a genetic link, the blood samples were then used for research pertaining to inbreeding, schizophrenia, metabolic diseases, alcoholism, and population migration without consent. This case was settled out of court and the tribe received \$700,000.

⁵² *Beleno v. Tex. Dept. of State Health Servs.*, No. SA-09-CA-188-FB, United States District Court for the Western District of Texas. In this case, blood samples were collected from newborns for blood screening. The leftover samples were then used in research, but the parents did not give consent for the research. The case was settled out of court, but all of the leftover samples were destroyed.

The origin of most ethical regulations guiding human subject research is the Declaration of Helsinki.⁵³ This document emphasizes the important need for researchers to obtain informed consent from research subjects prior to conducting research on human subjects. The Declaration of Helsinki, however, is only a guideline; it is not legally binding.

In the United States, the Declaration of Helsinki has been adopted into the Federal Policy for the Protection of Human Subjects, also known as the Common Rule. Although the Common Rule does give guidelines for protecting human research participants, it does not address the question of who owns the human tissue specimens.⁵⁴ The Common Rule also requires informed consent. Institutional Review Boards (IRBs) are established by individual agencies in order to provide an additional level of regulation and control. Although none of these ethical guidelines address tissue ownership after it has been excised from the body, they all recognize the importance of informed consent and transparency with regard to using human subjects. It is recognized that individuals cannot give informed consent if they are not adequately informed. This need for information speaks to the fact that there should be transparency in research, including the possibility for profits. In keeping the theme of transparency, it is also reasonable that individuals should be included in profits that develop as a result of the use of their tissues for research. Individuals whose tissues are used for research should be included throughout the entire research process. If a researcher and their team are profiting from the research, then the individual who made the research possible should also be included in the profits.

The current framework in which researchers are permitted to remove tissues from an individual and then profit from them needs to change. The commercialization of another's cells and tissues is wrong. The case of the Lacks' family is a prime example of a family that was exploited due a lack of protection for people whose cells or tissues are used in medical research. The need for consent and also the consideration for families to receive compensation must be at the forefront of medical researchers' concern. It is inappropriate for medical researchers to receive benefits while the individual from whom the sample came receives nothing. Just as sperm and egg donation allows for compensation to be given to the donors, donors of other bodily tissues should also have the possibility to receive compensation.

⁵³ "Declaration of Helsinki." *World Medical Association*. Web. 24 Nov. 2013. <<http://www.wma.net/en/20activities/10ethics/10helsinki/>>. Originally published in 1964 by the World Medical Association, and revised 7 times since its creation. These regulations emphasize the importance of an individual's right to make informed decisions in regard to participating in research. This declaration also recognizes that although there is a need for research, "the subject's welfare must always take precedence over the interests of science".

⁵⁴ "Federal Policy for the Protection of Human Subjects ('Common Rule')." *United States Department of Health and Human Services*. Web. 25 Nov. 2013. This was published in 1991, and it has since been adopted by 16 federal agencies. This policy is interpreted and enforced by the Office of Human Research Protection, a division of the Department of Health and Human Services. This is considered the base line standard for ethics for federally funded research, and it considered the starting point for Institutional Review Boards to develop individual guidelines for specific institutions.

Conclusions

“No court has ever in a reported decision imposed conversion liability for the use of human cells in medical research.”, *Moore v. Regents of University of California*⁵⁵ Just because a court has never made a decision granting a property interest in cell and tissues removed from a body doesn't mean one should not exist. Recent cases seem to trend toward recognizing an individual's interest in samples taken from their bodies, or at least imply that medical researchers must be cognizant of consent and potential profit.

There also are no explicit ethical guidelines addressing property interests in cells and tissues that have been excised from the human body. This suggests a need for change in which the issue of property interest and sharing in the profits from medical research on a patient's tissues is explicitly addressed in not only ethical guidelines, but also in the law.

⁵⁵ *Moore v. Regents of University of California*. Supreme Court of California (1990), 51 Cal.3d 120, 793 P.2d 479, 271 Cal.Rptr. 146.

It is of course important to not inhibit the progression of medical research, but just as researchers are compensated for their time, so too should the individuals from whom the samples were taken in the first place. Just as sperm and egg donors are compensated for their donations, so too should individuals who donate their cells for medical research. It is interesting that sperm and egg donors receive money for their donation⁵⁶, but individuals who donate their cells and tissues for medical research that have the potential to change current scientific views receive nothing.

Many individuals argue that this would lead to the sale of body parts or the hampering of medical research, but as long as a legal and monitored framework is set up, this would not be a problem. The framework could be similar to sperm and egg donations, in which a set sum was given for certain types of donations. In this legal framework it would also be important to include regulations for the possibility of commercialization of cells from an individual. This is without a doubt a difficult framework to establish, but it is one that is necessary. The unregulated use of another's body for profit, even by medical researchers, cannot continue; individuals from whom the cells and tissues are taken should be included in the entire process, even the profits. This without a doubt includes the members of the Lacks family. The family is entitled to a portion of the profits that have resulted from the commercialization of Henrietta Lacks' cells.

⁵⁶ See previous section on *Value of the Human Body*.

UNTOLD STORIES: AN ANALYSIS OF
SEXUAL ASSAULT DATA, CRIME, AND PUNISHMENT

Ariana Aboulafia

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I. Introduction

Recently, it seems that American news media has been reporting on sexual assault quite often. From discussions of the Rolling Stone article accusing fraternity members at the University of Virginia of gang-raping a girl at a party⁵⁷ to debates over self-defense products, issues surrounding sexual assault certainly are being brought to the attention of the public. But, is the representation of sexual assault in American media an accurate reflection of the frequency of the actual occurrence of sexual assault in the US? Furthermore, just who are the victims and perpetrators of sexual assault? Do they tend to belong to a single demographic group? What is the most common punishment for a perpetrator of sexual assault? And, perhaps most importantly, why does sexual assault occur, and what can we as a society do to reduce this type of crime? This paper will attempt to answer those questions by studying current crime data trends, the history of data collection regarding sexual assault, and sociological theories on crime explanation, particularly one written by Mark Stafford and Mark Warr which discusses general and specific deterrence and its relation to the frequency of crime. The main finding of this paper is that although sexual assault rates in general are declining, our criminal justice system does not proportionally punish perpetrators of sexual assault, partially because victims do not proportionally report sexual assault crimes.

⁵⁷ Erdely, Sabrina R. "A Rape on Campus: A Brutal Assault and Struggle for Justice at UVA." *Rolling Stone*. N.p., 19 Nov. 2014. Web. 11 Feb. 2015.

There are several common assumptions about sexual assault that would seemingly comprise the answers to some of the questions I just asked – unfortunately, many of those assumptions are not based in fact. An article published by the University of Minnesota Duluth mentioned that some of the most common assumptions about sexual assault are that sexual assault is only a women’s issue, that sexual assault it is relatively uncommon, that most sexual assault occurs interracially, and that sexual assault victims often do not know their assailant.⁵⁸ As the article notes, many of these so-called “rape myths” can have incredibly negative effects on victims of sexual assault and may even discourage them from reporting crimes, which in turn can lead to inaccurate data regarding sexual assault. This paper will compare official data from different sources on sexual assault and challenge sexual assault “myths” like the ones listed above; by focusing on sources of crime data that come from both law enforcement and victims directly, I believe that this study will contribute immensely to existing knowledge on the commonality of sexual assault and the demographics of perpetrators and victims of sexual assault. This study is particularly significant at this point in time not only because of the current issues regarding sexual assault that have been recently discussed in the media, but also because of the current popularity of television crime dramas that focus on sexual assault like *Law and Order: SVU* – the more that representations of sexual assault (that could be true or false) surround us, the greater the need for and significance of a study like this that attempts to strip away the “smoke and mirrors” and identify the realities behind this form of crime.

II. Methods

This paper primarily uses data from the Uniform Crime Report (UCR) from the United States Federal Bureau of Investigation in comparison to data from the National Crime Victimization Survey (NCVS) to draw conclusions as to the actual frequency of sexual assault and demographic data on sexual assault perpetrators and victims. Throughout the study, I have also used various educational, journalistic, and legal sources (particularly the Rape, Abuse & Incest National Network) that serve as different platforms and presentations of data from the UCR and NCVS, as well as other sources. Because this paper uses the UCR and the NCVS as incredibly important sources, it is necessary to first discuss and analyze the ways in which the UCR and NCVS go about collecting data as well as the strengths and limitations of the data collected by each source. The Uniform Crime Report is essentially a compilation of official statistics on various types of crime from law enforcement agencies throughout the country. Because of the way that the UCR gathers crime data, there are inherent strengths and weaknesses to it as a source of data on any crime, including sexual assault.

A major weakness of the UCR is that, because it can only serve as a representation of crime reported to law enforcement agencies, it is inherently subject to the whims of lower law enforcement agencies when it comes to crime classification and reporting, both of which can have negative effects on the accuracy of the UCR as a whole. For example, if a lower law enforcement agency decides to classify an attempted rape as an assault, or misclassifies the race of a perpetrator, those are the statistics that are

⁵⁸ Hamlin, John. "List of Rape Myths." *List of Rape Myths*. University of Minnesota Duluth, 3 Mar. 2005. Web. 16 Feb. 2015.

going to go into the UCR; furthermore, if a victim for whatever reason chooses not to report a crime to a law enforcement agency, that data will also not be included in the UCR. This major weakness of the UCR, in fact, is one of the reasons that the NCVS is considered a valuable source of crime data.

The NCVS, unlike the UCR, relies on direct reports from victims of crime via a national household survey – the survey is randomly distributed, giving anyone over the age of 12 an equal chance of being chosen to take the survey and an equal chance of having the opportunity to self-report their experience(s) with crime throughout the past year. The greatest strength of a survey-based method of gathering crime data like the NCVS is that it allows for the measurement of crimes that were not reported to law enforcement. However, the accuracy of the NCVS is also limited – it relies on the memory, honesty, and ability to accurately report of victims, many of whom can be confused by the wording or ordering of survey questions according to a study discussed in Clayton Mosher's "The Mismeasure of Crime".⁵⁹ Furthermore, as Mosher also mentions, the NCVS does not reach people in institutions (like colleges and universities) who may constitute a significant number of victims and perpetrators of sexual assault.

While keeping these general limitations of forms of crime data analysis in mind, completing this study forced me to consider an entirely different type of limitation as well: variations as to the historical versus the current definition of sexual assault and rape. According the FBI's "Rape Addendum" web page, prior to 2013 all offense data for sexual assault was filed under "forcible rape", which was collected under a so-called "legacy definition". This "legacy definition" defined "forcible rape" as "the carnal knowledge of a female forcibly and against her will." This definition is problematic, particularly to a study like this one, because it inherently makes sexual assault a crime that can only happen to women; furthermore, it limits the actions that can comprise sexual assault by using the term "carnal knowledge", which (according to the 8th edition of Black's Law Dictionary) is an archaic legal term referring to sexual intercourse only.⁶⁰

Because of this definition, prior to 2013, sexual assault that did not involve penile-vaginal coitus or sexual assault that did not have a female victim likely would not have been considered in the UCR. However, in 2013 the FBI changed their definition and classification of sexual assault, choosing to remove the word "forcible" from the former category title of "forcible rape" and changing the definition to one that more closely mirrors the federal legal definition of rape; the current UCR definition of rape is "penetration, no matter how slight, of the vagina or anus with any body part or object, or oral penetration by a sex organ of another person, without the consent of the victim." This expanded definition makes it difficult to use the UCR to study trends of sexual assault and to measure the accuracy of the UCR's 2013 data on sexual assault because many lower law enforcement agencies have not yet adopted the FBI's revised definition of rape, leading to issues with classification of sexual assault crimes.⁶¹ While this historical change in the gathering of crime data makes it difficult to study the UCR as a fully accurate

⁵⁹ Mosher, Clayton James., Terance D. Miethe, and Dretha M. Phillips. *The Mismeasure of Crime*. Thousand Oaks, CA: Sage Publications, 2002. Print.

⁶⁰ Garner, Bryan A., and Henry Campbell Black. *Black's Law Dictionary*. N.p.: n.p., n.d. Print.

⁶¹ "UCR - Rape Addendum." *FBI*. FBI, 27 Oct. 2014. Web. 16 Feb. 2015.

measurement of sexual assault data, the UCR still can be used to at least measure trends of forcible sexual intercourse against women and, as such, still brings some value to this study.

III. Data

According to both the UCR and the NCVS, violent crime in general – including sexual assault – has decreased fairly steadily throughout the past ten years (see figures 1-2). Although what constitutes “violent crime” varies between the UCR and NCVS (namely, the NCVS does not include murder/homicide), both include sexual assault/rape statistics as a part of violent crime statistics. And, sexual assault statistics have followed the same pattern throughout the past twenty years as greater statistics on more general violent crime – according to the NCVS, sexual assault rates have decreased by more than 50% since 1993 (see figure 3).⁶² So, while both the UCR and the NCVS seem to agree that the rates of violent crime as a whole and sexual assault more specifically have decreased in recent history, they report vastly different numbers as to just how many sexual assaults occur each year, or even just how many sexual assaults occurred in the past year alone.

According to the UCR, there were 79,770 rapes reported to law enforcement in 2013,⁶³ however, according to the NCVS, there were 300,170 rapes/sexual assaults that actually occurred in 2013 (see figure 4). The UCR measures sexual assault rates in numbers of females only (because of their definition of sexual assault) and published a rate of 25.2 rapes per 100,000 females in 2013; however, the NCVS (which uses a definition of rape and sexual assault similar to the revised UCR definition)⁶⁴ published a rate of 110 rapes per 100,000 people ages 12 and over. These seem like huge differences – where could this disparity possibly come from? Perhaps one explanation could be a statistic from the NCVS which mentions that in 2013, only 34.8% of sexual assault/rapes were reported to police – if the vast majority of rapes are not being reported to police, then there is no way that the UCR can accurately report them, which could be the major culprit behind the vast differences in the numbers and rates of sexual assault between the UCR and the NCVS.

Not only did an analysis of the UCR and NCVS uncover large disparities in the frequency of sexual assault, a deeper analysis also uncovered differences in the perception versus the reality of who commits sexual assault, who is arrested for sexual assault, and who is victimized by sexual assault. According to the Rape, Abuse & Incest National Network (RAINN), which compiles data from the NCVS and other resources from the United States Department of Justice, the standard profile of a perpetrator of rape is quite different from the perception of a “rapist” – 52% of perpetrators of rape are white and are, on average, 31 years in age. However, despite the fact that 52% of perpetrators of rape are white, according

⁶² "How Often Does Sexual Assault Occur? | RAINN | Rape, Abuse and Incest National Network." N.p., 2009. Web. 16 Feb. 2015.

⁶³ "UCR – Rape." *FBI*. FBI, 27 Oct. 2014. Web. 16 Feb. 2015.

⁶⁴ "Bureau of Justice Statistics (BJS) - Rape and Sexual Assault." *Bureau of Justice Statistics (BJS) - Rape and Sexual Assault*. N.p., n.d. Web. 13 Feb. 2015.

to the UCR, only 45.3% of those arrested for rape in 2013 were white, while 52.2% were black.⁶⁵ And, despite the fact that the average age of a perpetrator of sexual assault was 31, perpetrators between the ages of 25-29 were actually most likely to be arrested for sexual assault in 2013.⁶⁶ Interestingly, there were two main statistics from the UCR on arrests that seemed to follow statistics on sexual assault itself – both arrests and reports of sexual assault were most likely to have male perpetrators⁶⁷ and were most likely to occur in the South.⁶⁸

If the perpetrators and those arrested for rape may not be exactly who we expect, neither are the victims – according to RAINN (which cites not only the NCVS and Department of Justice, but also the Center for Disease Control on this page) one out of every ten of rape victims in 2003 were male, and about 3% total of American men – or, one out of every 33 – have experienced an attempted or completed rape in their lifetimes. As for women, approximately 17.6% of women in the United States have experienced an attempted or completed rape – and, of that 17.6%, 34.1% were American Indian/Alaskan women, 24.4% were mixed race women, 18.8% were black, 17.7% were white, and 6.8% were Asian/Pacific Islander (see figure 5). Interestingly, when these statistics are taken into account, the person that is most likely to be a victim of sexual assault is an American Indian or Alaskan woman, followed by a mixed-race woman.⁶⁹

Although many of the statistics regarding sexual assault have proven surprising, the most surprising statistic was one on the rates of punishment for those who commit sexual assaults. According to RAINN, 98% of perpetrators of sexual assault will never spend a single day in prison – of every 100 sexual assaults, approximately 32 will be reported, seven will lead to an arrest, and two will lead to a felony conviction and the perpetrator spending time in prison (see figure 6). So, it seems that the average sentence for a perpetrator of rape is no sentence at all – and, even of those convicted, the average sentence will vary by state due to judicial discretion, rules of procedure, and varied definitions of sexual assault, rape, and ages of consent. Keeping all of these factors in mind, according to the Public Broadcasting Service, the average sentence served for sexual assault/rape is between 35-65 months,⁷⁰ which seems pretty short considering that, also according to the Public Broadcasting Service, the average sentence served for someone convicted on federal marijuana charges is 42 months. Because the sentences for sexual assault vary so incredibly by state and circumstance, (and particularly because the vast majority of perpetrators of sexual assault will never be convicted or sentenced at all) there was not enough data to determine whether or not average sentences vary by race, gender, or age – however, as previously mentioned, the UCR did show that black perpetrators of sexual assault are disproportionately likely to be arrested for their crimes.

⁶⁵ "Arrests by Race - 2013." *FBI*. FBI, 03 Nov. 2014. Web. 16 Feb. 2015.

⁶⁶ "Arrests by Age - 2013." *FBI*. FBI, 03 Nov. 2014. Web. 16 Feb. 2015.

⁶⁷ "Arrests by Sex - 2013." *FBI*. FBI, 03 Nov. 2014. Web. 16 Feb. 2015.

⁶⁸ "Crime in the US by Region." *FBI*. FBI, 25 July 2011. Web. 15 Feb. 2015.

⁶⁹ "Who Are the Victims? | RAINN | Rape, Abuse and Incest National Network." *Who Are the Victims? | RAINN | Rape, Abuse and Incest National Network*. N.p., n.d. Web. 11 Feb. 2015.

⁷⁰ "Frontline - Match the Crime to the Time." *PBS*. PBS, n.d. Web. 16 Feb. 2015.

IV. Discussion and Conclusions

An analysis of data on sexual assault from the Uniform Crime Report and National Crime Victimization Survey shows us many things. First, that the majority of sexual assaults are not reported, and that this fact combined with the recent change in classification of sexual assault crime makes the UCR a rather unreliable form of measurement for data on sexual assault. Second, the average perpetrator of rape is different from the common perception of a “rapist” – they are most often white, despite the fact that the majority of people arrested for sexual assault crimes are black. Perhaps most interestingly, the demographics of sexual assault victims were also contrary to assumptions; 3% of victims were male, and racially the most common female victim was an American-Indian/Alaskan woman, followed by a mixed-race woman. In general, an analysis of sexual assault data brings us to the main finding that our criminal justice system does not proportionally punish perpetrators of rape and that one of the greatest challenges in combating sexual assault is the lack of reporting of sexual crimes. Despite the fact that the NCVS allows victims of sexual assault to self-report their experiences, some believe that even the numbers reported by the NCVS constitute a vast underreporting of the number of sexual assaults in the United States, not only because of survey wording but also because it does not reach students in educational institutions. And, even though (as noted by “The Mismeasure of Crime”) educational institutions are supposed to ensure accurate reporting of crimes under the Clery Act, 94 institutions are currently being investigated for mishandling and underreporting crime statistics, particularly those relating to sexual assault.⁷¹

Underreporting is a huge challenge to combating sexual assault, and as such, any measure that would encourage reporting would not only improve the data collection methods for this type of crime but would also likely reduce this type of crime – if perpetrators of rape knew that their crimes were likely to be reported (and thus that they were likely to be punished for their crimes), this type of crime could become less prevalent. In an article written for Slate, author Emily Bazelon mentions possible changes to the methods of the NCVS that she believes would encourage reporting, like allowing people to take the NCVS online, changing survey wording to give “room for survey-takers who might not call what happened to them ‘rape’”, and perhaps most importantly, to add questions into the survey regarding drugs and alcohol, to establish whether the victim’s ability to give consent was impaired by substances (legally, if someone is intoxicated or under the influence they are unable to give consent).⁷² These methods could definitely improve both data collection practices and the ability of our criminal justice system to more proportionally dole out punishment for sexual assaults and related crimes.

Other than changing surveying practices (and continuing to encourage law enforcement agencies to adopt the revised definition of rape for increased accuracy of the UCR) I believe that the main way to reduce the prevalence of sexual assault is to introduce sexual assault education as early as possible. Some people are opposed to teaching young teenagers about sexual assault because they may not want young

⁷¹ Kingkade, Tyler. "Barnard College Joins List Of 94 Colleges Under Title IX Investigations." *The Huffington Post*. TheHuffingtonPost.com, n.d. Web. 16 Feb. 2015.

⁷² Bazelon, Emily. "We've Been Measuring Rape All Wrong." *Slate*, n.d. Web. 16 Feb. 2015.

teenagers to know about the existence of such crimes, but mandated education as to what constitutes consent and what constitutes sexual assault may be the only way to change the ideas of the future generations about what is and is not acceptable when it comes to sex, and what constitutes a crime that should be reported to law enforcement.

Sociologically, there are many reasons why sexual assault occurs, such as Stafford & Warr's theory, which holds that there is little difference between general and specific deterrence when it comes to crime and that, rather than focusing on general versus specific deterrence, deterrence theory should instead recognize that people may think of punishment for crimes in general or collective terms rather than specific ones.⁷³ When applied to sexual assault, this theory provides a fair explanation for why these crimes are so common – they are consistently not reported, thus the perpetrators are consistently not punished, making the general and collective deterrence against committing sexual assault incredibly weak. Because the general deterrence is so low, even if an individual were to be convicted and sentenced for a sexual assault crime, it is possible that that person would not think twice about committing another sexual assault crime, purely because of the lack of general deterrence despite the presence of individual deterrence. And, while Stafford & Warr's composite deterrence theory is likely not the entire reason that sexual assault occurs, it is certainly a valuable theory to keep in mind, particularly when crafting policy; typical policies used to combat crime (like longer or more severe sentences) play into only individual deterrence since the vast majority of perpetrators of sexual assaults will never be charged or convicted, hence why the better, more long-lasting solution to sexual assault focuses on education instead of incarceration. Sexual assault occurs too frequently, and perpetrators are not punished frequently enough – but, I believe that by studying the causes, effects, and statistics behind sexual assault crimes, it is possible to work towards a future where neither of these things will be true.

POLITICAL PSYCHOLOGY AND IDENTITY OF CAMBODIANS

Shireen Ebrahim

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⁷³ Stafford, Mark C., and Mark Warr. *A Reconceptualization of General and Specific Deterrence*. Publication. N.p.: n.p., n.d. Print.

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Abstract: *Various factors besides culture and religion assist in defining the identity of a community. In the case of Cambodia, the tragic genocide of the Khmer Rouge and its aftermath established an unrelenting Cambodian identity suffering from severe psychological trauma. The lack of essential reconciliation and rehabilitation efforts by the government has played a role in the transgenerational passage of the trauma and needs to be addressed for the stable progression of Cambodian society.*

Key Words: psychological trauma, reconciliation, identity politics, transitional justice

I. Introduction

Cambodia’s name has become synonymous around the world for a country still plagued with the horrors of the Khmer Rouge reign from 1975 to 1979 that tragically brought about the death of approximately two million Cambodians. Their death, brought on either through famine or work, translated into major structural and economic challenges. However, the gravest challenge faced by society remains the question of identity and mental health of Cambodians. The Khmer Rouge genocide and the feeble response of Hun Sen’s regime left a lasting psychological imprint on the cultural identity of Cambodians that lived through the atrocities, and continues to do so indirectly in the lives of the newer generations. Only through acknowledgement of the national truth about Cambodia’s history and proper pursuit of social reconciliation efforts will Cambodians be more likely to gain closure and reshape their identity.

II. Historical Context

The cultural identity of Cambodians has been a central question since Cambodia's independence from France in 1955, in the first regime of Norodom Sihanouk. In defining the nation, Sihanouk named Khmer reverence and Buddhism as the fundamental attributes of Cambodians. Through the selective categorization of Cambodian identity, other ethnic and minority groups were excluded and left with an uncertain status in society. Despite the ethnic Khmer dominant community, Sihanouk's identity requirements marginalized and caused tension among the other minority religious and ethnic groups (*Zook, Cambodia #1*). Following the seizure of power, the Khmer Rouge leader Pol Pot and the other high ranking "brothers" implemented a new form of regime that incorporated racial and cultural purity beliefs with extreme Marxism and Maoism. Having first formed as a rural based armed resistance under Norodom and then Lon Nol, the Khmer Rouge quickly began a quest to purify and return Cambodia back to the glory days that had been lost through Western influence. Under Khmer Rouge ideology, the new pure Khmer civilization had to empty out of their so-called artificial cities and move into the rural heartlands. The leaders believed that the rural heartlands held the key to the foundation of the powerful rural based empire of the past. Individuals categorized as "new people" – based on their occupations, western connections, or higher classes – were forced to work in farmlands, tortured as prisoners, or outright killed (*Zook, Cambodia #2*). The tactical division of the population favored the chosen "old people" as a way of gaining support and recruiting the poor and young commoners frustrated with the struggles of class inequality.

The biggest source of anger among the poor communities was the disrespectful manner in which rich individuals looked down upon them. This shameful treatment would cause a recipient to lose face, which was and continues to be an integral part of Cambodian social hierarchy (Procknow). Alexander Hinton of Rutgers University notes from his research "while many Cambodians are usually able to manage their anger so that disputes do not break out, they do not always simply forget about a manner." Though he observed that the notion isn't applicable to all, he did acknowledge that Cambodians can hold a grudge after several small anger-provoking happenings and will not forget the shame. In order to elevate their own status and gain respect, they must exact revenge through a much more disproportionate act than the initial offense in order to completely destroy their enemy (Hinton). In order to fulfill moral obligation, be perceived as "higher than," and to ensure an ultimate end to the conflict, these retaliation acts can result in the killing of the individual or even the entire family lineage. This "Cambodian cultural model of disproportionate revenge (*karsangsoek*) contributed to the genocidal violence that occurred during the time of Democratic Kampuchea (DK)" (Hinton). He further deduced that "the Khmer Rouge ideology took the resentment stemming from all these sources and gave it a common focus (class struggle) and target (the urban population)" thus laying the groundwork for the emerging violence (Hinton).

The "old people" on the other hand, such as farmers, were viewed favorably, thus relieving some of the smaller ethnic groups in remote regions of Cambodia of the terrors. The Khmer Rouge saw them as "core people" who had no contact with Western habits and thus caused them to live collectively (Mam). The minority ethnic groups that were able to get through the genocide easier became a source of

resentment by the Khmer community following the collapse of DK. Many Khmer individuals despised and mistreated ethnic groups such as the Phnong people, author and activist Somaly Mam's group. In her book, she details how the Khmer viewed "Phnong as barbarians who are uncontrollably violent-some even say we are cannibals" (Mam). Writing about the Khmer's perception of Phnong people as inferiors demonstrates the animosity still felt today in identity politics between those who were categorized and celebrated as "Cambodian" during Sihanouk and Pol Pot's regimes.

Aside from the collective cultural identity established by DK through the new and old people, the Khmer Rouge instilled a new form of ideology that has shaped the character of Cambodians. The results of this ideology was in part due to the forced methods employed by the Khmer Rouge leaders but also indirectly through the tactics taken up by the people in coping with the atrocities of the time. This ideology was one of self-perseverance and self-assertive attitudes that represented a new feature of Cambodian life (Downie). The threat of witch-hunt like accusations of foreign connections made people paranoid and afraid for their lives; trust was lost among even the closest communities: neighbors and families. Pot's idea was for everyone, especially the poor and the young, to do everything on their own and be able to form a self-sustaining society without any foreign influence. Downie outlines how traditionally, Buddhism constituted the moral and ethical system of Cambodia and was extremely important for the preservation of the Khmer nation and culture. However with the abolishment of Buddhism by the DK, there was a complete destruction of trust, human dignity, and perhaps moral values. This "survive or die" culture of the Khmer Rouge broke down social and family norms, making people less likely to help one another when they were no longer bound by the former system of obligations (Downie). Buddhist notions of the pursuit of happiness and truth were completely demolished with the angst and promotion of a selfish society.

III. Culture Today

This self-reliant culture of Cambodians is a consistent theme in Mam's book but is especially highlighted with Khmer families and their children. Self-reliant culture is understood as a key factor in the massive trafficking industry of Cambodia as friends and parents themselves are often responsible for trafficking of children (Zook, *Trafficking*). Mothers and family members are willing to sell their children or wives to brothels in order to sustain themselves financially. The cultural mentality is described by Mam as one in which women are seen as servants and only know shame in regards to their bodies. Violence and rape towards women is accepted and is common not only with the poor but even the richest Cambodians. Many Cambodians feel justified treating women and children in this way and are careless regarding the consequences (Mam). With no public forum for support and reconciliation, police and public officials are able to carry on with the self-serving ideals with the assistance of bribes ceasing any efforts in curtailing sex and labor trafficking.

Trafficking, poverty, and lack of proper infrastructure are only some of the ramifications of the DK and the political upheavals of Cambodia's history. The death of the two million individuals not only left physical and structural damages but even more crucially, deep psychological trauma that continues to

haunt Cambodia's society. Those who survived the killing fields and forced labor often dealt with various issues such as death, torture, or assault of a close family member or a friend. Loss of household, source of income, and personal possessions also have psychological roots in some of the biggest problems such as trafficking that Cambodia deals with today. Psychological disorders such as anxiety, depression, PTSD, and thoughts of suicide are substantially high in the older generations of Cambodians. McLaughlin reveals "studies have found probable PTSD rates ranging from 14.2% to 33.4% among Khmer Rouge survivors" and psychologically scarring trauma that has a role in high substance and alcohol abuse as well as domestic and sexual violence. Survivor interviewees have cited the huge socio-economic problem of poverty, as both a cause and a consequence of poor mental health (McLaughlin). Besides the obvious difficulty of psychological effects on individuals, those traumatized also become marginalized and a burden to society.

Despite all of the correlations of mental health between identity and socio-economics influencing Cambodian society, psychiatric and mental health services in Cambodia remain extremely limited. "It is estimated that only 0.02% of the entire Cambodian health budget goes towards mental health" (McLaughlin). Although the United Nations enacted a few mental health programs, they were short-term and failed to establish a lasting presence. Explicit political and societal circumstances provide the foundation as to why the mental health provision of Cambodia is essentially non-existence. Lack of large-scale data fails to provide the substantive support for policy makers in order to promote mental health services a top priority in their agenda; with lack of adequate resources, mental health services are overwhelmed and unable to meet the serious needs of the population. The field of mental health had not even emerged onto the public scene until a few short years ago as the reign of Khmer Rouge had caused the tragic killings of almost all Cambodian psychiatrists. In the past few years, the Cambodian government has finally recognized and labeled the issue of mental health as one of its main targets for the future. Yet the deficiencies in governmental programs, services, and funding have demonstrated otherwise.

While the absence of governmental institutions and programs has formed political roadblocks for the rehabilitation of Cambodians, societal issues also have a significant influence. These societal norms can be seen with the cultural mindset of Cambodians, in which many do not recognize mental health issues as serious or in need of attention. Taboo notions in regard to psychiatric hospitals, mental health illnesses, and their causes still prevail in society; the stigma of being labeled "crazy" hinders many individuals from seeking assistance in fear of losing face in their communities (*Asia Life Magazine*). The Khmer Rouge legacy of self-preservation becomes evident once again in the form of self-censorship and unwillingness to disclose information to others. Cambodians alive during the genocide do not want to dredge up the past as it provokes too many painful memories. A collective silence has come to define the character of the Cambodian community who did not share their stories with the younger generations. Those born after the genocide lack virtually any knowledge on their past and the societal and parental emphasis on silence has been further reinforced with Hun Sen's regime.

There are however a small number of families and individuals who do wish to discuss their trauma and receive support, but lack the necessary knowledge on the resources available to them. Not knowing the types of treatments available, many can get overwhelmed and instead choose to return to their traditional sources such as healers, monks, and nuns (*Asia Life Magazine*). This can be a cause of

concern as healers and monks are often not properly trained and equipped to deal with mental disorders such as Post Traumatic Stress Disorder, or PTSD. Recently, there has been a surge of studies advising integration of traditional and religious actors into the mental health discipline and discussion; they suggest that combining Western treatment and Eastern cultural beliefs can ensure better results and confidence for patients (McLaughlin). Only having Western medications and methods of coping with mental illnesses will not necessarily resonate with Cambodians who have not shared the same history or cultural background as Westerners. The Transcultural Psychosocial Organization (TPO) is an excellent example of an organization that has incorporated Buddhist ceremonies, in which families testify about the deaths of their loved ones before monks in a pagoda, into their trauma counseling and self-help programs.

TPO has also been successful in implementing educational programs for children and communities to bring about a form of public discourse concerning their historical legacy (Bartu). Having been a member of the Khmer Rouge himself, Hun Sen's regime focused on burying the past rather than taking part in public reconciliation. Through the cultural norms, children are not encouraged to engage in conflict resolution dialogue. In her memoir *First they Killed My Father*, Loung Ung writes "they do not ask me about my experiences. In our culture, it is enough that the older sibling relates the family's story. Children are not asked for opinion, feelings, or what they individually endure." Although they may not know it, children of genocide survivors also feel the toll of their parent's trauma as often symptoms of PTSD are passed down to them. Experts believe that the trauma of Khmer Rouge impacted the parenting style of survivors and transmitted symptoms such as aggression and impulsiveness to future generations. Experts argue that "elevated rates of PTSD among the general Cambodian population, which may reflect a wider transmission of Khmer Rouge-associated trauma" (McLaughlin). The intergenerational transmission of trauma will most likely continue if not attended to, for it has become ingrained in the Cambodian cultural fabric.

The experience of trauma and PTSD is not limited only to Cambodians living in Cambodia today. During the reign of Khmer Rouge and the unrest between the transitional periods, approximately 400,000 Cambodians fled to refugee camps in Thailand and Vietnam or traveled to the United States. Although the United Nations High Commissioner on Refugees was successful in returning refugees back to Cambodia through incentive programs and packages, refugees still experience their own distinct form of trauma from the difficulties faced at the refugee camps. Thailand was especially hostile towards refugees that they labeled "illegal immigrants" (Zook, *Cambodia* #3). Internally other challenges persisted especially for women; rape and violent assaults towards women and girls were frequent. With the end of the Democratic Kampuchea, Khmer Rouge members also fled to refugee camps and lived alongside families that had escaped from there. These emotional tolls were heavy on the families who took in resentment by Cambodians upon their return back home. Substance abuse and domestic violence as well as examples of attachment theory are powerful actors for many refugees, including refugees even in the United States.

With the risks of trauma being so high, the Cambodian government must not only establish better mental health provisions but also provide a better foundation for national reconciliation and social rehabilitation. Reconciliation is defined as "process that allows a society to move from a divided past to a shared future; means by which former enemies can find a way to live side by side without necessarily liking or forgiving each other, and without forgetting the past" (Hazan). By rebuilding a new cultural identity together, Cambodians would be able to create hope for the future by acknowledging the pains and

communal victimization of the Cambodians. Communitization, the act of sharing traumatic experiences along with a period of mourning over losses, is a major part of the healing process that was not established by the government. Without these steps taken, there is a lack of trust and security that is essential in the further development of the nation; NGOs and civil society have difficulty advancing their roles in society without the existence of trust as a community (Downie). These cultural conditions influence political development and thus must become a top priority for the central government.

Educational reform like those of the TPO has been one aspect of civil society that requires vast amount of attention. During the Khmer Rouge, teachers had been targeted and imprisoned as new people. However even with Hun Sen's regime, the only mentions of the genocide were linked to political propaganda and didn't present correct facts and information. It was only a few years ago that Cambodian textbooks finally even began to cover an unbiased portrayal and discussion of the genocide to students (Ngo). Understanding history and its main players is essential for the younger population in order to veer towards a more democratic future and to avoid past mistakes. The government would be able to foster social reconciliation for students and their families by acknowledging the suffering of survivors and promoting new moral values and societal bonds in educational system. Of the generations born after the genocide, 80% have poor or very little knowledge of the Khmer Rouge (UCBHRC). Through a willingness and devotion to education about the genocide as a political decision, there have been small steps taken towards remembering rather forgetting.

IV. Conclusions

In a major nationwide survey conducted by the UC Berkeley Human Rights Center, 80% of respondents considered themselves to be victims of the Khmer Rouge and an overwhelming 90% stated that members of the Khmer Rouge should be held accountable for the crimes they committed. Yet through the Extraordinary Chambers in the Courts of Cambodia (ECCC), only one person has been sentenced to prison after 30 years of crimes committed by KR leaders. Many of the upper leaders did not stand trial while those standing trial were initially granted pardons (UCBHRC). This form of criminal justice has not been able to render a true sense of resolve and closure especially with the Cambodian notion of revenge and remembering. Many Cambodians today live side by side with former Khmer Rouge members and tensions run high over desire to take vengeance. Therefore informal truth commissions as suggested by Bartu, will be able to provide the proper setting and groundwork for dialogue between the DK former combatants and victims themselves.

The politics of Cambodia's cultural identity has been through much turmoil with the various regime changes and conflicts over the course of its history. These radical shifts have had profound impacts on Cambodia's society, culture, political processes, and administrative structures. First through the Democratic Kampuchea regime and second with the secretive and uncommitted tactics of the communist state of Hun Sen, the destruction of human dignity and psychological trauma is still dominant in Cambodia. By focusing the nation on social rehabilitation programs and public acknowledgement of a shared past, Cambodians will be closer in achieving a more peaceful state of mind and stable society.

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IMITATION IS THE SINCEREST FORM OF FLATTERY: SOFTWARE AND USER
INTERFACE DESIGN IN A CHANGING PATENT LANDSCAPE

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Introduction

The use of gestural interactions in technologies is booming. Even children as young as two years old are scrolling through screens, pinching to zoom, tugging to refresh, choosing icons, and fast forwarding on iPads and iPhones. All of these gestural interactions with mobile interfaces are patented.

Patents protect valuable ideas, but the abstract nature of new technology is causing problems. Look no further than your next drive home from work. Had an automobile manufacturer patented the user interface elements of a car, the consequence would be that no other manufacturers could put a steering wheel, gas pedal, clutch, and shifter in the same configuration⁷⁵. How would your car look and function? Would you need to learn a new method each time you drove a different car? The public convenience of a universal system (such as steering wheels) can outweigh the need for inventor protection.

The same is true of software patents like those that cover gestural interactions with smartphones. They cause problems for patent examiners, the patent system, start-up companies, and innovation.

The gestural aspects of software technology are like a new language, and for that language to become useful as a communication tool, the gestures and language must reach a critical mass to become viable. Software patents give huge corporations a monopoly on technologies that would be better used by the public as a whole. Innovation will continue to stagnate due to litigious patent holders and fuzzy boundaries of patent overlap, until the guidelines surrounding software patents are redrafted. Unfortunately, gestural technology is not accommodated well by the current patent system.

I. History of the Patent System

Before considering the current issues facing software patent law and how they affect communication, we need to get a sense of both the history of patent law and some of the more general problems.

A. A Changing Landscape: Mechanical vs. Software Innovations

The first patent was granted in 1790 to Samuel Hopkins for the process of making pot ash, an ingredient used in soap making and glass manufacturing. Since its inception,⁷⁶ the United

⁷⁵ This acceleration occurred in the late 1970s and 1980s and has exponentially grown since then. See Paul Sherman, *Your Design is Infringing on My Patent: The Case Against User Interface and Interaction Model Patents and Intellectual Property*. July 10, 2007

⁷⁶ The patent office, while an essential piece of our nation's history, is not always viewed in such positive light. James Gleick takes a distinct viewpoint on the patent office as part of a Faustian bargain,

States Patent and Trademark Office (USPTO) has granted more than 8 million patents.⁷⁷ As the rate of technological invention and innovation has accelerated,⁷⁸ the USPTO has had to change how it interprets patents. In recent years, the realm of patents has shifted from more mechanical objects (anything from a sewing machine to a cigarette lighter) to software (anything from a process for conducting e-commerce on the Internet to a computerized payment settling system at a bank).⁷⁹ The Patent Act does not explicitly prevent the patenting of algorithms, and the Supreme Court has ruled that computer software is patentable.⁸⁰

This shift has been controversial. Patents have always been sticky due to their imprecise language. Even the language used in mechanical device patents can be vague, but in those instances there is a tangible object to look at to gauge the meaning of the words.⁸¹

In contrast, intangible software⁸² has emerged so rapidly in the past 20 years that many argue that the patent rules that have stood since the USPTO was formed are failing to keep up.⁸³ As the value of an invention shifts from industrial design to interaction and user interface design (such as that used in iPhone screens), patent law is less able to accommodate innovation.

where inventors give up their secrets, publishing them for all to see, in exchange for a 20-year government guarantee on a monopoly of their technology. See James Gleick, *Patently Absurd*, <http://www.around.com/patent.html>

⁷⁷ United States Patent and Trademark Office, uspto.gov

⁷⁸: See *Sherman, Supra*, note 2

⁷⁹ 7u

⁸⁰ See Pardo, 684 F.2d 912 (C.C.P.A. 1982) from *See John Swinson, Copyright or Patent or Both: An Algorithmic approach to Computer Software Protection*, in the HARVARD JOURNAL OF LAW AND TECHNOLOGY, Vol. 5, 1991, at 154.

⁸¹ The U.S. Patent Office used to require a working model to be submitted with mechanical patent applications. The patent office would compare the working models and if the device worked in a different manner, the device did not infringe on the patent. See James Bessen, *The Patent Troll Crisis is Really a Software Patent Crisis*, THE WASHINGTON POST, (September 3, 2013). <http://www.washingtonpost.com/blogs/the-switch/wp/2013/09/03/the-patent-troll-crisis-is-really-a-software-patent-crisis>.

⁸² Software is defined as “having functionality that distinguishes it from ordinary writings and with the aid of a computer has the power to physically implement intellectual concepts.” See John Swinson, *Copyright or Patent or Both: An Algorithmic approach to Computer Software Protection*, in the HARVARD JOURNAL OF LAW AND TECHNOLOGY, Vol. 5, 1991, at 154.

⁸³ Contrarily I found an interesting article that discussed the idea of “patent thickets,” where a dense grouping of branches (or in this case patents) chokes up technology and technological innovation. The author pointed out that while many are yelling, “The sky is falling” over the use of patents in software, the same kind of patent thickets occurred not so long ago with the sewing machine. Although it is hard to take the mind set where a sewing machine is revolutionarily equivalent to a smart phone, in the 19th century it was just that. Therefore I must note that while it seems, in the midst of this “smart phone patent thicket,” that technological innovation is ceasing due to lawsuits and licensing, it may just be an indication that a complex and marketable product is emerging. See Jeffrey Lewis & Ryan Mott, *The Sky is Not Falling: Navigating the Smartphone Patent Thicket*, WORLD INTELLECTUAL PROPERTY ORGANIZATION MAGAZINE, February 2013, http://www.wipo.int/wipo_magazine/en/2013/01/article_0002.html

B. Problems with Patents

Two of the biggest problems facing patent law are that (i) the sheer number of applications for patents is overwhelming,⁸⁴ and (ii) the boundaries of ownership granted by patents is difficult to understand.

The number of patent applications has risen by 50 percent over the last decade, with more than 540,000 patent applications filed in 2011 alone.⁸⁵ Since 2000, Apple has won 4,100 patents, Microsoft 21,000, and Google 2,700.⁸⁶ In the last twenty years, software patents have increased from only one-fourth of all USPTO-issued patents to the overwhelming majority of issued patents.⁸⁷ And it's not just the sheer number. As compared to other inventions, software patents are two times more likely to be litigated and patents on methods of doing business, which are usually software-related, are seven times more likely to be litigated.⁸⁸ According to a Stanford study, in the last two years, \$20 billion⁸⁹ was spent on patent litigation and patent purchasing in the smart phone industry alone.⁹⁰ The rising number of patent applications has created a patent backlog within the US Patent and Trademark Office (USPTO).

Software patents often grant ownership of concepts rather than mechanical creations, and typically the description of a concept is enough to obtain a patent. Thus, software has caused the boundaries of patent law to become even more undefined and to overlap.⁹¹ When this overlap

⁸⁴ It takes on average two to three years for a patent application to be granted, with more than one million patents currently pending. See Aimee Groth, *Amazing Facts about U.S. Patents*, BUSINESS INSIDER, September 4, 2011, <http://www.businessinsider.com/patent-us-trademark-office-backlog-2011-9>.

⁸⁵ See Charles Duhigg & Steve Lohr, *The Patent, Used as a Sword*, NY TIMES, Oct. 7, 2012, at 1, <http://www.nytimes.com/2012/10/08/technology/patent-wars-among-tech-giants-can-stifle-competition.html?pagewanted=2>.

⁸⁶ *Id.*

⁸⁷ See Joe McKendrick, *Software Patents are Too Vague and Abstract, Says U.S. Government Report*, SMART PLANET, (September 1, 2013), <http://www.smartplanet.com/blog/bulletin/software-patents-are-too-vague-and-abstract-says-us-government-report/>

⁸⁸ See James Bessen & Michael Meurer, *What's Wrong with the Patent System? Fuzzy Boundaries and the Patent Tax*, FIRST MONDAY, vol. 12, number 6, June 2007, <http://firstmonday.org/ojs/index.php/fm/article/view/1867/1750#b8>

⁸⁹ An amount equivalent to eight Mars rover missions or the cost of building a fleet of 3,000 Titanic ships. See Charles Duhigg & Steve Lohr, *supra* note 13.

⁹⁰ See Tracy Durkin, *What Next in Design Patents for On-Screen Locks?*, Patently-O Patent Law Blog, March 6, 2013,

⁹¹ Swinson, *supra* note 13, at 154

occurs, patent examiners have difficulty determining the novelty of a patent.⁹² Moreover, novelty is just one characteristic that an invention must have to receive a patent.⁹³ In addition, an invention must be not obvious and useful.⁹⁴ The use of software in communication compounds this problem.

II. Gestures, Communication, and Similarity

Communication is everywhere,⁹⁵ and what makes language, semantics, and gestures useful is that they have reached a critical mass. That is, methods of communicating have become widespread, and thus a viable tool for interaction.⁹⁶ In the landscape of our technology,⁹⁷ the importance of gestures continues to increase. In an article on gesture mapping for interaction design,⁹⁸ the author discusses the origins of language and its role in today's use of symbolic gestures:

“In the early days of communication, shared humans transitioned toward symbolic thought processes because they began to communicate through pantomime. Pantomime required an integration of sensory experiences that eventually allowed humans to evolve into

⁹² *Id.*

⁹³ And that's actually not that strict of a standard. Recently a patent was granted for measuring bra size by using a tape measure (US 6467180 B1). Not sure that is the definition of novelty (which reads, according to Merriam-Webster, “the state of being new, different, and unusual.”)

⁹⁴ I thoroughly enjoyed the description given by the authors about how to meet these three criteria: “To receive a patent, an invention must be novel (substantially different from what exists), not obvious (one can't patent a new toaster simply by expanding it to handle five slices of bread), and useful (someone can't patent an invisibility machine if invisibility is impossible).” See Charles Duhigg & Steve Lohr, *The Patent, Used as a Sword*, NY TIMES, Oct. 7, 2012, at 13. <http://www.nytimes.com/2012/10/08/technology/patent-wars-among-tech-giants-can-stifle-competition.html?pagewanted=2>.

⁹⁵ In one of my communication classes, the professor gave us the acronym WOVEN to describe all of the types of communication: written, oral, visual, electronic, and non-verbal.

⁹⁶ I can't help but think of a child who has made up its own language, babbling to itself. While this is language, it is not what I consider communication because others do not understand it. There is no true exchange of information through this interaction. In user interface design and the gestures further discussed I will make a point that the narrowing of the communication tools we use helps to facilitate communication in the masses.

⁹⁷ Part of our changing technology landscape is videophilia, a condition of the new human tendency to focus on sedentary activities involving electronic media. *Infra* note 29. As I sit at my computer for about the sixth hour writing this paper, I do not think I have videophilia, because all I want to do is go outside.

⁹⁸ See Lane Marie Kuhlman, *Gesture Mapping for Interaction Design: An Investigative Process for Developing Interactive Gesture Libraries*, The Ohio State University Thesis, 2009, at 12. http://accad.osu.edu/assets/files/LKuhlman_Thesis.pdf

the use of symbolic systems of representation.”

She points out the interesting fact that we all have our own style of gestures similar to the differences in handwriting styles, and that these gestures (like handwriting) have a typified form. The author decisively states, “As with any language, conformity to a type form allows more articulate expression because there is a standard of communication in which to express one’s self to others in a common language.”⁹⁹ When patents are granted for abstract ideas like tug to refresh, the commonality of the gesture and communication tool ceases to exist, because the “common language” is protected by the patent and cannot be used by others.

A. Imitation & Usability

The relationship between gestures, software, and patent law is a conundrum, as illustrated by some of the recent patents granted to Apple. Patent number 7,479,949¹⁰⁰ described in the application as “touch screen device, method, and graphical user interface for determining commands by applying heuristics” gives Apple the patent for multi-touch interfaces.¹⁰¹ It limits the use of “gesture-based interaction schemas” by other companies so that they must work around the patent and create different ways of scrolling. Thus, this communication tool will not be as useful or viable because it will not reach critical mass.

In addition to affecting the communication aspect,¹⁰² patents also affect usability. One author notes that copying others’ designs allows us to avoid “usability hell.” This hell, having a “fragmented set of gestures that require different interactions to trigger the same action,” means that we can learn a “pull-to-refresh” downward motion gesture on Twitter, but that we need to learn other unique interactions (edge gestures, multi-finger taps, swiping) to refresh feeds on

⁹⁹ Basically what I was trying to describe at note 34. Kuhlman did it much more eloquently.

¹⁰⁰ It was granted to Apple in January 2009, temporarily invalidated in December 2012 by the USPTO, and then upheld by the USPTO in October 2013. See Bryan Bishop, *Apple Multi-Touch Patent Upheld by US Patent and Trademark Office*, THE VERGE, October 17, 2013. <http://www.theverge.com/2013/10/17/4849376/apple-multitouch-patent-upheld-by-us-patent-and-trademark-office>

¹⁰¹ As explained for those not on the level of Steve Jobs in computer literacy, this patent relates to scrolling, like on smart phones, and how the mode of scrolling can switch from horizontal to vertical to diagonal while locking in on a specific direction. See EnGadget for a video demonstration of what the patent protects <http://www.engadget.com/2013/10/17/apple-patent-multitouch-uspto/>

¹⁰² This is a very specific example of a very specific, small gesture, but imagine if Apple and other companies went after every piece of software they created. It slows the dissemination of technology to the critical masses. Another more far-reaching, tangible example is VisiCalc, created in 1979 by Dan Bricklin. He did not obtain a patent for this computer program, allowing Microsoft to bring out Excel in 1999. See Randall Stross, *Why Bill Gates Wants 3,000 Patents*, NY TIMES, July 31 2005. http://www.nytimes.com/2005/07/31/business/yourmoney/31digi.html?ei=5090&en=b674d209b5106a1b&ex=1280462400&partner=techdirt&emc=rss&pagewanted=all&_r=0

Snapchat or Instagram.¹⁰³ The benefit of “imitation as the sincerest form of flattery” is that user experience can be made universal across apps and platforms, improving communication.

Companies and their designers may argue that patents are essential to prevent copy and imitation. According to a former Apple executive, “What patent law does is provide something for other companies to work around. The patent is out there. It’s wide open. The whole world looks at it and thinks ‘How do I get around it?’ That inspires creativity and more development.” However, this rationale invites several issues. One author gave the example of General Motors patenting the method that allows drivers to insert the key to start the ignition.¹⁰⁴ Why should other inventors and engineers have to intentionally design around this method, creating a more complicated interaction, just to avoid the patent? Wouldn’t it make more sense to work within the patent design, which is efficient and streamlined? To be fair, if a patented design is awful, it certainly wouldn’t make more sense to work within it—the argument applies only if a patented design is truly the best available.

B. Expression – A Form of Communication

Software patent law is difficult to understand because software stems from algorithms. Patent law does not protect abstract ideas,¹⁰⁵ and there is much debate on the distinction between “the idea” and “the expression” of that idea.¹⁰⁶ Many people have argued that because software is simply a set of commands in computer language, it should not be patentable. Others have argued that while the functionality of a design should not be patentable, the actual algorithms that underlie the functionality should be.¹⁰⁷ In the early 1980s, the courts saw software as just a collection of mathematical algorithms. An NY Times article put it, “tiny revelations of nature’s secrets – not as an invention and thus not patentable.”¹⁰⁸ What makes a computer program valuable is its form of expression. Machines can understand and perform algorithms, and human language cannot be used to tell machines what to do yet. Although the expression of a computer program is what is valuable,¹⁰⁹ the patent system in place is not intended to protect that

¹⁰³ Austin Carr, *Should Good Interaction Design Be Legally Defensible?*, FAST COMPANY MAGAZINE, October 14, 2013, <http://www.fastcodesign.com/3019905/should-good-interaction-design-be-legally-defensible>

¹⁰⁴ *Id.*

¹⁰⁵ Swinson, *supra* note 10, at 156

¹⁰⁶ See Karen Leisten & Anne Marie Ettinger, *Protecting a Company’s Graphical User Interface*, WILMER HALE <http://www.wilmerhale.com/pages/publicationsandNewsDetail.aspx?NewsPubId=89216>

¹⁰⁷ Sherman, *supra* note 6

¹⁰⁸ This statement about algorithms is supported by Swinson in the Harvard Journal of Law and Technology, “It goes without saying that a patent for a process that uses a law of nature, such as the process of bottling milk using gravity, does not give the patent holder a patent on the law of gravity.” See Swinson, *supra* Section I, note 6, at note 27.

¹⁰⁹ I see the software as the “interpreter,” much like for a foreign language, converting information so that someone else (or something else... a computer) can understand the function. Sherman, *supra* note 6, at 154

expression. User interface design¹¹⁰ is complicated, and when patent examiners spend only 17 hours per patent application,¹¹¹ it's no wonder there is overlap and confusion in software patent law. Patent examiners¹¹² do not typically have time to delve into underlying features of patent applications for business models or computer software and thus do not sufficiently clarify how those patents will function.

III. Patents in War

A. *Patents as Shields*

There is some sense of the “greater good” in interaction and interface design amongst software inventors, and it is apparent that some companies take advantage of this. For example, patent 8,448,084 granted Twitter the now common “pull to refresh” gesture.¹¹³ However this gesture-based interaction is not used only on Twitter. Both Facebook and Apple's iOS6¹¹⁴ use it as well. This is allowed because in 2012 Twitter released an “Innovator's Patent Agreement” which stipulates:

“The IPA is a new way to do patent assignment that keeps control in the hands of engineers and designers. It is a commitment from Twitter to our employees that patents can only be used for defensive purposes. We will not use the patents from employees' inventions in offensive litigation without their permission. What's more, this control

¹¹⁰ Expanding upon the given definition due to the importance of user interface design in smart phone technology and litigations, I found this three-pronged explanation of user interface design given by the Interaction Design Association's guidelines: 1) Interaction design defines the structure and behaviors of interactive products and services, and user interactions with those products and services. 2) Good interaction design effectively communicates a system's interactivity and functionality, defines behaviors that communicate a system's responses to user interactions, reveals both simple and complex workflows, informs users about system state changes, and prevents user error. 3) Interaction design is grounded in an understanding of real users (goals, tasks, experiences, needs, and wants) and balances these needs with business goals and technological capabilities. See Luke Wrobesky, *Defining Interaction Design (IXDA Guidelines)*, April 14, 2008. <http://www.lukew.com/ff/entry.asp?327>

¹¹¹ See Groth, *supra* note 12

¹¹² I figured there must be some jokes out there about patent examiners...I was right. “A guy goes to the Patent Office to apply for a job as a patent examiner: The interviewer asks him, 'Are you allergic to anything?' He says 'Yes - just caffeine.' 'Have you ever been in the service?' 'Yes,' he says. 'I was in Iraq for two years.' The interviewer says, 'That will give you 5 extra points toward employment,' and then asks, 'Are you disabled in any way?' The guy says, 'Yes 100%...an IED exploded near me and blew my testicles off.' The interviewer tells the guy, 'O.K. In that case, I can hire you right now. Normal hours are from 8 a.m. to 4 p.m.. You can start tomorrow at 10 a.m. - and plan on starting at 10 a.m. every day.' The guy is puzzled and says, 'If the hours are from 8 a.m. to 4 a.m., why don't you want me to be here before 10 a.m.?' 'This is a government job,' the interviewer says. 'For the first two hours we just stand around drinking coffee and scratching our balls. No point in you coming in for that.'

¹¹³ Duhigg & Lohr, *supra* note 13

¹¹⁴ *Id.*

flows with the patents, so if we sold them to others, they could only use them as the inventor intended.”¹¹⁵

This patent agreement strays pretty far from the typical company policy¹¹⁶ on engineer’s rights and patent guidelines. Most companies make engineers, designers, and employees sign their inventor’s rights over to the company, giving the company the power to do what they want with the patents (including selling them at their discretion).¹¹⁷ One story told about Apple is that engineers were asked to participate in monthly information disclosure sessions, where they explained to lawyers what they were working on. These projects included slight modifications to programs or streamlining processes that the lawyers could then use “for defensive purposes.” Eventually¹¹⁸ an engineer argued that he didn’t believe in patenting the rights to basic software concepts.

While Twitter and their new patent agreement focuses on using patents as a shield, many companies are using patents as swords. A destructive arms race of software patents on broad technologies has emerged from both patent trolls, looking solely for violators of patents (often times hitting the small startups and innovators who have limited funds) and big technology companies like Apple.¹¹⁹

B. *Patents as Swords: Apple vs. Samsung*

One of the best cases of big technology companies and their patent problems is the high-profile, messy, Apple vs. Samsung trial.¹²⁰ Apple originally filed the suit against Samsung in April 2011,¹²¹ and in April 2012 the jury awarded Apple \$1.05 million dollars.¹²² The United States District Court for the Northern District of California found that Samsung had copied and cloned the Apple-patented gestures, including the pinch-to-zoom, the bounce-back or rubber band effect, and the double tap zoom.¹²³ Besides these gestural interactions, the jury found that design elements such as rounded icon corners, the home button, and “rounded rectangle app icons arranged in a grid” infringed on Apple’s designs.¹²⁴ Most recently, Judge Lucy Koh

¹¹⁵ Twitter posts the Innovator’s Patent Agreement on their website for all to see and encourages others and other companies to #jointheflock and begin to change the patent landscape from one of offense to more of a defensive stance. See Twitter <https://blog.twitter.com/2012/introducing-innovators-patent-agreement>.

¹¹⁶ Law school faculty at the University of Berkeley California have also developed an idea known as the “Defensive Patent License,” where companies contribute their patents to a common pool that shields patent holders from “litigious aggressors.”

¹¹⁷ Duhigg & Lohr, *supra* note 43

¹¹⁸ Duhigg & Lohr, *supra* note 43

¹¹⁹ *Id.*

¹²⁰ The United States District Court in the Northern California District has a webpage solely dedicated to this case, due to the high level of media and public interest. <http://cand.uscourts.gov/lhk/applevsamsung>

¹²¹ Apple Inc. vs. Samsung Electronics Co. Ltd. et al C11-1846 C12-0630

¹²² See Michael Phillips, *A Patent War with Few Winners*, THE NEW YORKER, November 22, 2013.

¹²³ *Id.*

¹²⁴ *Id.*

ordered a retrial to recalculate the damages of the case, and in November 2013 the retrial ended, with the court ordering Samsung to pay Apple \$290 million in damages.¹²⁵ Essentially, the court granted Apple a monopoly on many broad software technologies.

Conclusions

While patents are good for protecting ideas, the connection between gestural technology like interface design and communication make the public convenience of having a uniform system in place more valuable than protecting inventors' rights. The current patent system needs to be reworked to reflect the changes in software and gestural technology that has emerged in the last few years. The gestures and inherent communication at play in these devices and software programs, such as the multi-touch feature, are creating a new language and for that language to become useful as a communication tool, the gestures and language must reach a critical mass.

The overwhelming amount of patent litigation in the software and cell phone technological realms and the sheer number of overlapping, unclear patent boundaries creates stagnation in innovation and communication. Companies like Apple and Samsung need to rethink their use of patents, using them to further technological innovation and create widespread communication instead of pursuing lawsuits to keep one another from gaining the upper hand in the mobile market. Creating broad patents and using them to attack other innovators suffocates innovation. The patent system and those who enforce the granted patents need to reexamine the laws and the system because of the changing landscape of software technology.

¹²⁵ See Neal Ungerleider, *Jury Orders Samsung to Pay Apple \$290 Million*, FAST COMPANY MAGAZINE, BUSINESS + INNOVATION, November 21, 2013, <http://www.fastcompany.com/3022090/fast-feed/jury-orders-samsung-to-pay-apple-290-million>

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