

# Preface

Welcome to *City Tech Writer*, Volume 10! In this issue we learn about penicillin, graffiti, and ham sandwiches (not from hospitality management, but from the math department). We travel to the Cultural Revolution in China, consider gentrification in El Barrio and in Brooklyn, and experience the power of empathy in the medical world. The pendulum of this edition swings from fashion and fine fragrances to female genital mutilation and meth addiction. There is quite a variety here, so be prepared to explore...

As we go to press, there are many people to thank: the faculty throughout the College who have submitted over two hundred pieces of extraordinary writing from their courses; Communication Design Department Chair Mary Ann Biehl for her support; Professors Mike Rankin and Peter Fikaris, whose communication design students produced many creative cover designs; Mandy Mei, who designed the gorgeous cover for this volume; Amanda Puk, who designed several striking posters for the volume that were put up all over the College; and Wing Wat, who also contributed to the design efforts. In addition, I would like to thank Professor Lloyd Carr, the journal's Art Director since its inception, who coordinated the graphics and prepared the cover for production, and whose talent and guidance are deeply appreciated; the Reprographics Center's Lubosh Stepanek, who did a wonderful job of printing the cover, and Jeff Novak, Director of Campus Services, who coordinated this support; Chief Laboratory Technician Steve Caputo for his expertise; and printers George Pompilio and Peter Pompilio, who produced the volume with both skill and care. I am grateful to President Russell Hotzler, Provost Bonne August, Associate Provost Pamela Brown, and Dr. Stephen Soiffer for their invaluable support and encouragement. Special thanks goes to the President's Executive Assistant Marilyn Morrison; to the Assistant to the Provost Imelda Perez; and to Amoy Ansell for their help and guidance. I am deeply thankful to Professor Jennifer Sears for her help with editing. Also, I want to thank Professors Rebecca Devers, Rebecca Shapiro, Rob Ostrom, Caroline Hellman, Sean Scanlan, Mary Nilles, Patricia Rudden, Kate Falvey, Carole Harris, Kate Poirier, Abdallah Nihrane, Viviana Acquaviva, Liana Tsenova, Jeanette Espinoza, Stella Nicolaou, Lieselle Trinidad, Evgenia Giannopoulou, and English Department Chair Nina Bannett for their support and assistance. Julia Jordan and Avril Miller in the Faculty Commons have been extremely helpful; and I am grateful to English Department Office Assistants Lily Lam and Laura Kodet for being so generous with their time. Finally, I would like to thank Professor Jane Mushabac, without whom none of this would be possible! Ten years ago, she founded *City Tech Writer*, and it continues to thrive, while captivating and inspiring our community.

Let's now turn to Volume 10 and the outstanding writing in this remarkable anniversary edition.

Suzanne Miller, Guest Editor



# The Memory of My Grandmother

Anita Jiang

Grandmother couldn't write any words except her own name. People say: "Illiterate people are savages." But that wasn't my grandmother. In my small city in China, with all the young people gone to that eerie revolution, throughout those long afternoons and countless weekends, my grandmother was to my 5-year-old eyes an enlightened teacher, safeguard, and playmate.

I grew up in China in the '70s in the shadows of a so-called "Cultural Revolution." The Cultural Revolution had swept up all: books were burned and pencils weren't seen by me as a five-year-old child. The revolution put my uncle to death due to his position of politician; snatched my father to a jail because of his published critical articles; forced my mother, because of her teaching, to a remote village to do a farm job. That left me living alone with my grandmother in a small city. I was five. Knowing nothing about this revolution, and with the desire to see my parents, I decided to go across the city to a dock to see if my parents had come home. The dock had its own small waiting room with only two dim light bulbs and a few benches. When a ship approached, the small waiting room was crowded. And soon, the people would leave and the room would be silent. I waited and waited until sunset. When I tiredly dragged my legs home with tears in my eyes, I saw my grandmother in front of the door smiling at me. She cooed to me soothingly: "They have been doing some important things. Let us start eating dinner." I was disappointed, but I wasn't upset after her explanation. "It is a normal weekend," I always told myself while we were doing chores after dinner. The same things happened every weekend. My parents never appeared in this waiting room. After my uncle died, his two sons were dismissed from school. We were in the center of the trouble, but my grandmother was never gloomy or anxious, even once, in front of me. Almost every family had their own problems at that particular time. But, luckily, nestled deep in my grandmother's caring with her elderly wisdom, I was cut off from the outside world.

My parents' room was always locked. My grandmother cleaned the room once a week. She told me I was too little to be in the room. It made me always think of a mystery behind the door. After growing up a little, I was allowed to go into my parents' room with her. When the door opened, a small room was in front of me. "Don't touch anything, Lily," she called my name with a soft voice. I stood there and saw a big desk on my left side and an empty bookshelf. Along the wall was a bed. Four sides of white walls didn't have any decoration, except a notebook-sized picture hanging high on one hard wall. The edges of this picture were worn. Someone put up tape to try to fix it flat. It was a picture of the Mona Lisa. I was too little to realize that it was a remarkable moment for me to

encounter this masterpiece of art in China, where Western culture was a poison and education was a sin.

“Material of the clothes is mosquito-net like, and the brown color of her clothes looks dirty. She must be poor,” Grandmother, who was illiterate, whispered. I turned my head up to the picture, and noted that only the dark-green mounts behind her were familiar. Mona Lisa wasn’t smiling. We were both lost. Why was this poor woman in my parents’ room? After cleaning up the room, we locked the door quickly. The next week, when the door was opened, we both were in front of the Mona Lisa again. “She doesn’t have eyebrows. Do you think she is sick?” my grandmother asked. I tip-toed to try to get a closer look. I looked and looked, but couldn’t get an answer. I found her eye color similar to mine. Her fingers were flesh and her hands were comfortably relaxed on her legs. She didn’t look like a sick woman. The next week came. We gazed at her again, even longer. “Don’t you think she is smiling, Lily?” my grandmother turned her face around to me and asked. I looked back to my grandmother. She left me doing her dusting job. I was full of questions. I was trying to find answers, but the answers never came for a 5-year-old child. During those long afternoons, I learned a very important lesson from my grandmother, and it must be a seed buried deeply in my mind. The initial cognition of aesthetics is always started by asking questions with intuition, and then coming back to the work again and again with curiosity.

By now, as a woman with an art and design background, I can analyze Mona Lisa professionally, not with jargon and scholarship, but with my heart. It is all about memories: a warm memory of two illiterate women who were sixty years apart standing in front of the Mona Lisa wanting their confusion to be understood and their curiosity to be expanded.

# A New Generation

Cody Ford

With close to a hundred billion dollars in annual U.S. cigarette sales at stake, the American tobacco industry must be breathing a sigh of relief. Against a backdrop of increased legislation designed to curb America's appetite for tobacco cigarettes, a new generation of nicotine delivery device has been born. E-cigarettes promise to deliver nicotine anywhere, anytime, and to anyone—including our children—unless legislation can be passed to restrict the sale of this device and its accessories. Because e-cigarettes are currently sold openly on the internet, we must regulate the sale of e-cigarettes in order to protect the health of our next generation.

E-cigarettes are thin metal or plastic tubes that electronically vaporize liquid nicotine for the smoker to inhale. The health risks of this type of smoking are not well known. CBS News quotes Mitch Zeller, the director of the Food and Drug Administration's Center for tobacco products: "Right now for something like e-cigarettes, there are far more questions than answers" ("FDA: Ban Sales"). However, according to one of the first studies to investigate the biological effects of these devices, "electronic cigarettes can change gene expression in a similar way to tobacco." The study, as reported by [digitaltrends.com](http://digitaltrends.com) (and recently published in the journal *Nature*), "found that bronchial cells grown in a medium exposed to e-cig vapor showed 'strikingly similar' gene mutations to those grown in a medium exposed to tobacco smoke." The report continues, "Further research is needed to draw clear-cut conclusions, but these similarities may be an indicator that e-cig vapor could potentially increase a user's risk of cancer, despite the fact that e-liquid is completely tobacco free and doesn't require combustion to be consumed" (Prindle).

Reminiscent of unrestricted cigarette sales and advertising prior to the 1970s, when the health risks of smoking tobacco were also not widely known, the sale of e-cigarettes and related products is completely unrestricted online. According to Commissioner Dr. Margaret Hamburg of the Food and Drug Administration (FDA):

At the present time, when we can't regulate [e-] cigarettes, it's like the wild, wild, west. Companies can do anything they want. They can market in ways that they want... unless they make a therapeutic claim that it is a product for actual cessation of nicotine use, we can't regulate them. If they make a therapeutic claim we can regulate them as a medical product" ("FDA: Ban Sales").

And the cigarette industry *has* marketed this device in exactly the way that they want. As reported by Benjamin Ahmad, of *Morning Call*, an Allentown, Pennsylvania newspaper, “According to research from the American Academy of Pediatrics, adolescents ages 12-17 have experienced a 256 percent increase in exposure to e-cigarette ads and other forms of e-cigarette marketing.”

Although tobacco manufacturers have a long history of denying the targeting of youth in ad campaigns, it is clear, by the flavors available (such as cotton candy, chocolate cake, cookies and cream, peach, grape, and gummy bear) that manufacturers *are* targeting children in their marketing campaigns. As reported by [tobaccofreekids.org](http://tobaccofreekids.org):

In August 2006, U.S. District Court Judge Gladys Kessler released her final opinion in the U.S. Government’s landmark case against tobacco companies, meticulously describing how the tobacco companies target youth with sophisticated marketing campaigns. According to Judge Kessler, tobacco companies intimately study youth behavior and use their findings to create images and themes attractive to youth. Judge Kessler’s conclusion is very straightforward: “The evidence is clear and convincing—and beyond any reasonable doubt—that Defendants have marketed to young people twenty-one and under while consistently, publicly, and falsely denying they do so” (*U.S. v. Philip Morris*).

These are our teenagers. *Our children*. Who among you wants their son or daughter or younger sister or brother inhaling the candy-flavored vapor of liquid nicotine—a substance which is known to be addictive?

But allow me to welcome the smokers among you who may be using e-cigarettes. Let us for a moment consider the widely-touted health benefits of using cigarettes that do not contain tar, or many of the other chemicals that are known health risks. As adults, we make our own choices—healthy or not—for ourselves. Without regulation on the sales of e-cigarettes to minors, your children may not have that choice. They may be seduced by the advertising they are being exposed to. Whether you like it or not, they may wind up addicted to nicotine. If you support minimum age requirements for tobacco products, you must agree that e-cigarettes must be included.

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# The Audition

Ioulia Evsioukova

My daughter, who is 9 years old, began dancing at the age of 3. Initially, she took only two classes a week, but as the level of her dancing ability has increased, she now has to take classes every day, even several classes a day. Following her teacher's recommendations, my daughter and I started to go to auditions in Manhattan. Recently, we went to the Ellison Ballet School. We were very excited the morning the audition took place. We got dressed according to uniform standards and left home *muuuch* in advance to avoid even the smallest possibility of being late.

When we arrived at the school, we liked it right away. The huge building and large sunny classrooms with a lot of light and space made the school a very exciting place to be. There were others auditioning as well. The other ballerinas were several years older than my daughter. She was trying at 9 years old though participants usually are at least at the pre-professional level. All of the girls were practicing in the lobby. Some were stretching against the wall. By watching them, we could see that my little daughter was auditioning among the masters.

Finally the audition began! Everyone was invited to the room with an audition number. There were several teachers in the class beside Ellison himself. There were people with notebooks who were walking among the students, people with video cameras who stood mostly in the corner, and a musician who played the piano. Ellison showed a routine, and the class was repeating after him. While they were doing that, all teachers were walking among the participants and making notes in their books.

I could see my "mini me" was nervous. She started to make mistakes. (Since I have been watching ballet for so long, I have become a professional judge!) I saw that my little girl was not doing her best. It was especially sad since I knew she could do better. I also knew that it was happening because of her nervousness. Ellison noticed her, stopped her while everyone continued doing the routine, and whispered in her ear. I saw my daughter smile. Then Ellison (master of the masters) fixed her position, showed her the mistakes, and how to fix them, and she continued with the class. Calm and happy, she did well for the rest of audition. When we came home, I asked my daughter what he was saying to her during the audition. She told me that he told her how he fell from the stage during his first audition because he was so nervous.

Two weeks of expectation for results went fast. We were checking email every five minutes for fourteen days, and we were rewarded. The results came. We are in!

# Prospect Park Biodiversity Project: A Microbiological Perspective

Natassa Gavalas and Andrew Cook

## Introduction

Recreational use of water can substantially benefit the health and well-being of humans by providing an environment for pleasure, relaxation, and physical activities that may involve contact with water. If, however, recreational water is polluted, it may have adverse health effects related to physical, chemical and microbial hazards (*Water Safety Plan*). Therefore, water analysis constitutes a valuable tool for monitoring the quality and safety of recreational water. Recreational water analysis relies largely on ascertaining the presence or absence of certain organisms, termed indicator species; these indicators provide a metric with which to measure changes in water quality and conditions (“Microbial Fact Sheets”).

Coliforms, bacteria residing in the intestines of humans, animals and birds, are some of the most commonly used indicators. *Escherichia coli* (*E. coli*) is a common species of fecal coliforms, widely used as an indicator to measure water quality. The presence of *E. coli* in recreational water, especially at elevated levels, has been proven to indicate fecal contamination (“Lakes and Reservoirs”). According to the U.S. Environmental Protection Agency’s (EPA) established guidelines for recreational water quality, coliforms should not exceed 400 colony forming units (CFU)/100 mL for primary contact, 1000 CFU/100 mL for secondary contact (i.e. fishing, boating), and *E. coli* concentration should not exceed 126 CFU/100 mL per water sample (*Water Quality Standards*).

Coliforms exhibit traits common to pathogenic bacteria in humans: they possess a Gram-negative rod structure; they utilize either an aerobic or facultative-anaerobic respiration process; they are also generally non-endospore forming bacteria that ferment lactose to acid and CO<sub>2</sub> gas at 35° C (Cabral). Coliforms include both fecal coliform bacteria: bacteria that are found naturally in the intestines of warm-blooded animals and non-fecal coliform bacteria that can be found in plants, soil and in the aquatic environment (Farmer).

*E. coli* is a type of thermo-tolerant coliform bacteria that is prevalent in the feces of all warm-blooded mammals, including humans. It does not occur naturally in fresh water, vegetation, and soil, unlike total coliform bacteria which may live and reproduce in soil and water (Cabral). Hence, the presence of *E. coli* in water indicates that fecal contamination from humans or other warm-blooded animals has occurred. Furthermore, if levels of *E. coli* in recreational waters are found to be greater than guideline-stipulated levels, it is probable that disease-causing microorganisms are also present.



Prospect Park is a public park located in the New York City Borough of Brooklyn; it offers a scenic natural environment with spacious lawns, sports fields, forested areas, as well as Brooklyn's only lake. Prospect Park Lake is an artificially created lake that spans a 60-acre area along the park's southeast quadrant. The freshwater lake is fed by a natural stream with several surrounding ponds and provides a unique habitat for flora, fauna, and microorganisms. In addition to housing several species, Prospect Park Lake offers resting, feeding and breeding grounds for migratory birds (*Prospect Park Alliance*). The Prospect Park Biodiversity project of the New York City College of Technology, which aims to enhance students participation and learning in STEM through a civically-engaged framework, utilized the eco-complexity of Prospect Park Lake for an interdisciplinary study of biodiversity. The goal of the microbiological research was to perform a comprehensive water quality analysis of Prospect Park Lake. The water quality analysis attempts to determine the total number of bacteria and the fecal contamination by determining number of indicator coliforms, specifically *E. coli* and *Enterobacter* species.

### **Methods**

Water samples were collected from five different sites in Prospect Park Lake according to accessibility determined by the Prospect Park Alliance. The samples were placed in 50 ml sterile tubes and stored in a cooler at 4 °C, so as to prevent the growth of bacteria, and transported to the Microbiology Lab at the NYC College of Technology, where they were tested.

A ten-fold serial dilution of the water samples was performed in order to obtain an optimal number of bacterial colonies. From each dilution, 1 ml was plated on the surface of both nutrient agar and MacConkey agar. Nutrient agar is a complex medium generally used for the cultivation and isolation of colonies. MacConkey agar is a selective and differential medium used for detection of *E. coli*, a lactose fermenter that forms red/ pink colonies following incubation. The plates were incubated at 37°C for 48-72 hours, allowing the bacteria to grow and form visible colonies.

To determine the number of bacteria, the colony forming units (CFU) assay was used. The resulting colonies that formed during incubation were counted manually and recorded as the number of CFU per 100 ml of water. In addition, inoculation of Simmon Citrate agar from selected colonies on MacConkey agar was used to differentiate between *E. coli* and *Enterobacter spp.*

### **Results & Conclusions**

The highest total number of bacteria and *E. coli* were found from site number three, whereas site number five showed the least amount for both total number of bacteria and number of coliforms. Although Prospect Park Lake has no direct agricultural drainage from livestock or crops, the park itself offers a variety of habitats that embrace numerous wildlife species. Thus, one can hypothesize that the potential sources of bacterial and fecal contamination besides humans and domestic animals are wildlife.

Among the birds found along the lake are members of the Anatidae family that includes ducks, geese, and swans. All of these species were observed in sites one, four and five. Wild birds are known to excrete large amounts of fecal indicator bacteria, which may harbor enteric pathogens. Several studies have indicated that the density of aquatic birds can affect bacteria counts, as birds can be a natural source of fecal coliform bacteria and specifically *E. coli* (Hoyer et al.). However, their contribution to water pollution is difficult to estimate, and therefore would require the performance of specific tests (Kirschner et al.).

Several freshwater turtles were seen at site three and may have largely contributed to the number of total bacteria and coliforms found at that site. According to Mitchell's study on enteric bacteria in natural pollution of freshwater turtles, there is a miniscule threat of wild-turtle-associated bacterial pathogenicity (Mitchell et al.). It should be noted that although the primary source of coliform bacteria—particularly *E. coli*—in natural waters is the feces of warm-blooded animals, it has been shown that coliforms inhabit the gastrointestinal tract of several species of cold-blooded freshwater turtles as well. Nevertheless, cold-blooded vertebrates are rarely considered a potential source of coliform bacteria in natural waters and there is a limited body of literature regarding the association of coliform with aquatic turtles (Harwood et al.).

Another factor contributing to the higher numbers of bacteria in site two and three is the observed stagnation of the water, which includes lack of current and aeration. The low number of total bacteria and coliforms at sites four and five may be attributed to water dynamics, underwater currents, as well as the actual topography of the location; both sites are located at the widest part of the lake.

*Enterobacter spp*—facultatively anaerobic Gram-negative bacilli—were present in all sites except sites three and four, as indicated by the color change observed in the utilization medium. The presence of *E. coli* in sites three and four was confirmed by the absence of growth and color change on the Simmon Citrate agar.

Our results indicate that the coliforms exceed the safety standards for secondary contact (1000 CFU/100ml) established by the U.S. Environmental Protection Agency (Lakes and Reservoirs). According to the World Health Organization (WHO), the contamination of recreational water with fecal material is a persistent threat to public health. However, based on the observations and data recorded, it appears that the areas in which the water quality exceeds significantly the EPA safety standards are the areas with the highest concentration of wildlife. Thus, it seems that the elevated coliforms are due to natural sources that inhabit Prospect Park Lake. Measurements of pollution must include the detection of fecal contamination from all warm-blooded animals, as this is the natural link to the occurrence of pathogenic microbes in polluted water (Cabral). Further research would be required in order to establish a definitive positive correlation between coliforms and wildlife in the specific areas sampled in this project. Moreover, the samples drawn from most expansive area of the lake, sites four and five, displayed lower coliform levels.

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# Treating Alienation and Depression with Alternative Medicine:

Marilyn Krysl's "Curandera" and Jeanette Brown's "How to Visit a Healer"

Faizan Malik

Empathetic healing, the perception of wellness, and the contextualization of the source of disease and illness should be cornerstones of good medical care of any type. As revealed in Marilyn Krysl's "Curandera" and Jeanette Brown's "How to Visit a Healer," empathy can have great effects on those suffering from all kinds of illnesses, whether it be suicidal ideations, such as in Krysl's poem, or a simple cough like the narrator has in "How to Visit a Healer."

"How to Visit a Healer" is a well-crafted short story, which on the surface describes the weaknesses and vulnerabilities of western medicine and the stronger points of alternative medicine. The story is told by a female narrator who has a persistent cough and who, being unsatisfied with a regular doctor, decides to visit an alternative medicine healer. The woman is skeptical about the clinical competency of the healer, but she is soon pleasantly surprised by the perception, knowledge and skills of the man. The healer predicts her state of health and life perfectly by just observing her skin, personality, and eyes. From his inferences, the reader learns that the woman lives a frantic, stressful life, and that her cough may actually be the lesser of her problems. The healer prescribes all sorts of remedies, some spiritual and some medicinal, to treat her physical and mental ailments. Later in the story, the narrator realizes that she hasn't coughed once since she arrived, and during a massage she feels as if her esophagus is blocked. She sits up, coughs and sees something coming out of her mouth resembling a white feather. The healer asks her to cough once more, and when she is unable to do so he declares that she is cured. The author knows that the healer has helped her in more ways than one, and the narrator is obviously shaken as she leaves. She struggles to count the healer's fifty dollars and ultimately decides to pay more, leaving a generous tip behind.

"Curandera" is a poem, which like Brown's short story displays the healing power of alternative and folk medicine. In this poem, a supposedly "*Muy macho*" man approaches a Spanish healer for help, and we soon learn that beneath his dark sunglasses and tattoos, the man is miserable and wishes to die. The curandera instantly recognizes the man's depression and dissatisfaction with life just by looking into his eyes, and notes that he appears oblivious to the nature and community surrounding him. Here again, the theme of empathy is repeated

over and over. The healer uses the power of the community to bring about a change in the young man's perception of life. She stages the funeral of the patient complete with a coffin, flowers, mourners, and a priest. When the young man's family and friends gather around him, they say hurtful things about him and the way he lived his life, describing him as weak, but they end up weeping all the same. The family and friends leave as the "funeral" ends, but the experience stirs something in the man's soul, and he begins to weep, and in doing so eases his mental tensions and lets go of the façade he has been hiding behind. The healer uses this emotional state to demand that the man become more involved with his community, and deliver gifts to those who came to his funeral and performing errands for the town. She then opens the patient's eyes and makes him understand that when we help and empathize with others, it helps us to become more fulfilled and happier in life.

It is amply argued through the two texts that alternative medicine may possess the power to heal both the mind and the body. It is imperative to keep in mind that the methods used to bring this about are gentle, in harmony with nature, and seek to eradicate the problem of emotional atrophy and alienation from its roots. Western medicine has become grossly concerned with taking pills for every physical ailment without understanding that often the mental distress or loneliness of an individual is the chief underlying reason for physical ill health. Alternative healing takes into account the connection between a healthy mind and a healthy body and also the impact of the environment, relationships and quality of life on issues such as stress and depression. Krysl's "Curandera" and Brown's "How to Visit a Healer" emphasize the importance of empathy in the healer and the positive effect it has on the patient. Through these texts it is easy to observe that the mind has tremendous power over every aspect of our lives, and harnessing this power to heal our bodies is a profoundly appealing idea. It also highlights the fact that alternative healing systems are individualized and foster respect for the unique human soul. Finally, holistic methods such as those described in the stories are gentle on patients in all ways, and place an emphasis on faith and cooperation, which are useful traits in any medical setting. Krysl and Brown show that alternative healing systems are a powerful tool in treating certain problems, such as alienation and emotional disconnection, which are all too common in today's fast-paced society.

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# Drumsticks

Monica Cimini

“We don’t sell drumsticks,” I say to the customer as I look at him in disbelief. Does he know where he is? This is a KFC after all, not a music store.

“Yes, you do sell drumsticks,” he replies to me with confidence. He wears an expensive business suit, top quality eyeglasses (which I could never afford), shiny black dress shoes, and carries a brief case, like in a James Bond movie, along with *The New York Times* and *The Wall Street Journal*. My store is located on Second Avenue and the corner of 43<sup>rd</sup> Street, which is close to the U.N. building and other international and national agencies and offices. Many of the customers who come here are like him. They look like they are well-educated and have a comfortable lifestyle (which I used to dream about and see on T.V. and in the movies before I came to the U.S.). But I’ve never had any customer who comes into the wrong store and asks twice for the same thing when the answer is “no.” While I think about this with a long face, he again requests, “May I have my drumsticks?”

I reply, “Sir, Sam Goody is around the corner at 42<sup>nd</sup> Street, between Second and Third Avenues.”

He says with a patient face and calm voice, “Please go and ask your manager.”

Oh! Now I have to go to the manager and he will not be happy about this. It is near closing time and the manager is very busy. He needs to take care of the whole day’s paperwork, make sure the cups and dishes are stacked up for the next morning’s opening, and make sure that the janitor has made the store sparkling clean after a messy day of business. He will be upset with me for not being able to take care of one customer. This is my fourth week on the job and nearly six weeks in this country. I am not ready to lose this kind of job— one where I do not need to speak English very much.

“Excuse me,” I say to the manager, “a customer wants drumstick and I even told him that we do not sell them, and to go to Sam Goody Store around the corner. He insists that I talk to you...”

Oh my God! His face is turning red before I even finish my explanation. What did I do wrong here?! Within four weeks at my job I learned very well: “the customer is always right” and “never say no to a customer.” I did not want to say “no” to this customer, but it is the customer who is in the wrong store. What else could I say besides “no.” Now my boss’s face is red. I know this look. He is angry. America seems very confusing to me. My manager commands to me in an angry voice, “go and take money from the customer.”

I reply as politely as I can, “but we do not have a drumstick price button on the cash register. How can I take money for drumsticks?”

The manager becomes angrier and gives me a disturbed look as if he is saying to me with his eyes, "I do not have time for this nonsense near closing time." He quickly passes by me and walks towards my cash register while talking to the customer. I have to almost run to catch up to him because I am much shorter than he is. I want to know what is going on. The manager, by this time, has taken money from the customer and put it into my cash register. Without any explanation to me, he goes back and hands me a box to give to the customer. I take a chance and open the box to see what is inside. The moment that I open the box my manager bursts into an angry voice and says, "Why did you open the box? Give it to the customer."

I reply in a calm and confident voice, "I opened this box to know what a drumstick is in a chicken store."

Finally I see a little smile on the customer's face appear as he tells my manager, "Take it easy, sir. She is going to learn." As he grabs his drumstick box, he gives me a wink and says, "Welcome to America." This time his facial expression is light-hearted like a well-suited comedian. Even though he smiled at me, I did not like this long drama. He could have explained to me when he told me the second time that a drumstick is a chicken leg. Why didn't he? Why does he have to act funny? Not only act—even when Americans speak English, it does not sound normal. It is like listening to the high-pitched squeal of a cassette tape on fast forward. Then they blame us, like we have an accent. Why can't Americans speak English like normal people?



# *The Meth Epidemic:*

## A Documentary Review

Heather Killian

*The Meth Epidemic*, a Frontline documentary that aired on PBS in 2008, describes the national problem of methamphetamine addiction. The hour-long documentary (<http://www.pbs.org/wgbh/pages/frontline/meth/>) takes place in Oregon, where meth addiction is purported to have begun in the United States. Although most people are aware of methamphetamine and its effects and abuse potential (due in part to the success of the television series *Breaking Bad*), abuse of this drug is not covered in the media as widely as cocaine, heroin, and marijuana. Yet, it is arguably one of the most addictive drugs available in our country at this time.

*The Meth Epidemic* tells the story of how an editor from the local newspaper, *The Oregonian*, discovers a correlation between the rise and fall of methamphetamine addiction and the purity of the drug on the streets. He finds that when the meth was pure, users consumed larger quantities of it, recovering meth addicts were more likely to relapse, and non-users tried the drug for the first time and eventually became addicted to it. Ultimately, he concludes that all of these factors combined were responsible for a dramatic increase in crime and arrests.

In an effort to combat the meth problem, the Drug Enforcement Agency (DEA) decided that it needed to find ways to limit access to the drug's main ingredient, Pseudoephedrine, a drug that is contained in many over-the-counter (OTC) cold medications. After extensive negotiations with large pharmaceutical companies who were opposed to laws limiting access to their product, Congress succeeded in passing a law requiring that all states keep these medications behind the pharmacy counter and put in place a limit of two to three boxes per customer. In addition, Oregon passed its own law in 2006, removing pseudoephedrine from OTC shelves and reinstating it as a prescription-strength drug.

Also attempting to combat the meth epidemic by illustrating the dangers of the drug was Deputy Bret King, who compiled pictures of repeat offenders to show the physical deterioration of the meth addicts' personal appearance. His campaign, "Faces of Meth," reveals disturbing images of the rapid deterioration of not only a meth user's appearance but also his or her personality and quality of life over a short period of time.

Methamphetamine—when it is injected, snorted, or ingested orally—works on the dopamine neurotransmitter, causing large amounts of dopamine to be released in the brain. Dopamine is an excitatory neurotransmitter that is

responsible for making a person feel happy, confident, and sexually desirable. In addition to increasing dopamine levels, meth also blocks the dopamine membrane transporter (DAT), preventing the neurotransmitter from moving back into the axon terminal and becoming deactivated, as it should. Instead, the neurotransmitter stays in the synaptic cleft, continuing to react with the receptors. As the user continues to take methamphetamine, more receptors are created to deal with ever-increasing amounts of dopamine that is released. Unfortunately, when meth users stop taking the drug and their dopamine levels return to normal, there continues to be an inordinate amount of receptors that must now share the decreased amount of dopamine in the brain. This dopamine deficiency (depression) is what prompts the addict to return to the drug, but they are forced to use increased quantities of the drug to reach the same rush of happiness that they achieved from their last dose ("Drug Facts").

The article "How Meth Destroys the Body" states that when a person eats a food they enjoy, like chocolate cake, or engages in an activity they find pleasurable, like sex, their dopamine levels jump from 100 units to about 200 units. "Cocaine causes them to spike to 350 units," whereas with methamphetamine, "you get a release from the base level to about 1,250 units, something that's about twelve times as much of a release of dopamine as you get from food and sex and other pleasurable activities" ("How Meth"). This is the reason so many people become instantly addicted to methamphetamine. Users describe it as a feeling of euphoria like no other, and they continue to chase that feeling to recreate it, because psychologically, and then physically, they need it to be happy.

Since I had recently learned about dopamine and its manipulation with drugs in a pharmacology course, it was easy to understand the chemistry behind this drug. I did not know, however, the extent to which it distorts your brain chemistry and harms the entire body, both inside and out. Another documentary, *The Stages of the Meth Experience* ([www.drugfreeworld.com](http://www.drugfreeworld.com)), features a group of meth addicts who discuss their addictions. According to this documentary, the most common side effects are acne, rampant caries (cavities), tooth loss, hair loss and extreme weight loss. Personality changes include agitation, extreme aggression, hallucinations, delusions and paranoia. And the tendency to scratch and pick at the skin, due to agitation, causes meth users to develop lesions and sores. One user in the documentary contracted Hepatitis C because she was sharing needles when she was high. Another had to have her intestines removed because of the damage it did to her insides. This "problem" has reached epidemic proportions; it is not just a storyline on a popular TV show. Methamphetamine use needs to be eradicated on a worldwide level.

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# No Longer a Boy's Club: The Virtual World's Effect on Gender Fluidity

Zianne Cuff

Western culture has come to view gender as a binary concept, with only two fixed options: male or female. Because of this, gender fluidity is quite possibly one of the most controversial topics in present society. If one were to strip the terms "sex" and "gender" down to their very cores, they would appear to be nothing more than interchangeable synonyms. However, this is a common misconception. The term "sex" focuses more on the biological aspects of human design. Sex entails all of the chromosomal aspects of the human body—such as the genetic material, hormones, internal reproductive structures, and external genitalia—that are the byproducts of copulation passed down from one temporary vehicle to the next (Dawkins). However, gender is far more complicated. With the inclusion of all of one's physical traits, gender is the interrelationship between one's physical traits and one's internal sense of identification—how you perceive yourself in regards to sex—as well as how one presents oneself to the world in terms of behavior.

In "It's Your Gender, Stupid!" R.A. Wilchins observes just how controversial the designation of two universal genders has been within the lesbian, gay, bisexual, transgendered, queer, questioning, intersex, asexual, allies, and pansexual (LGBTQQIAAP) community. Wilchins states that many learn how to decipher one gender from the other simply by "knowing it when you see it" which basically means observing mannerisms and how people dress or behave. However, there is a bit of an issue with this idea that people are either one or the other. For instance, Wilchins brings up the topic of transsexuality and gender fluidity in that one feels discomfort with being confined to the idea of being forced into one gender category or the other. She then states that picking a singular gender, much like confining one's sexual preference, is restrictive and only the beginning of the problematic nature that comes with identifying oneself in this world. One shouldn't have to bend to fit into a space where he or she does not belong, since not everyone identifies as cissexual, i.e., is comfortable with their extremities and identifies by them accordingly.

*Gender fluidity* can be defined as a more flexible range of gender expression, where the person who identifies as *gender flexible* may have interests and behaviors that fluctuate from day to day. A recent article stated that "gender fluidity in women is a contingent adaptation that increased ancestral women's ability to form pair bonds with female alloparents who helped them rear children to reproductive age" (Kuhle 305).

How does this concept of gender fluidity carry over into the virtual world? Presently, with the continuous advancements of our society via technology, many are breaking free of this constrictive one-or-the-other mentality and are adopting a more open means of defining themselves. Many have taken to other avenues such as the virtual world, where all identities are masked under a façade and altered at the creator's whim, and where they can live vicariously through any avatar. Since the online world does not abide by the same social stigmas as reality, a woman can very well create a male avatar and vice versa without being subject to the gender stereotyping that may occur in the real world. Virtual identities and virtual experiences often correlate directly to physical ones. In the mid-1990s, an early server by the name of LambdaMOO was one of the most popular text-based online communities and has been critically acclaimed as a highly influential examination of virtual and social issues. *My Tiny Life*, written by Julian Dibbell, recounts his adventures in LambdaMOO and describes the social, sexual, and aesthetic aspects of MOO life. Dibbell states in his book that "Gender fluidity was a very unspoken concept in LambdaMOO; people did not disclose their real genders and often played underneath the façade of numerous virtual personas"(1). Today, with virtual worlds such as Second Life and IMVU, there is a similar pattern among users. Since these servers receive a great deal of traffic on a day-to-day basis, they are ideal magnets for those who wish to explore the concepts of gender fluidity to its fullest by creating a multitude of identities and correlating emotional intensities for each avatar in order to make the character playtime more enjoyable.

The virtual world has allowed a space for people to anonymously venture into the sex and gender of their choice without condemnation. This environment grants players an endless number of opportunities in regard to creation and customization relating to how a player appears. As Nick Yee and Jeremy Bailenson note:

A line of research known as the "Proteus Effect" has shown that users conform to stereotypes based on their avatar's appearance. Thus, participants given attractive avatars provided more information about themselves to a confederate stranger than participants given unattractive avatars. In addition to putting participants in someone else's body, virtual environments also allow participants to watch their avatar (i.e. themselves) do something they never did (274).

Not only can a singular person fulfill his or her inner most desires, that person can also carry them out with others who share similar interests. If people were apprehensive to experiment with fluidity in a real world situation, they can simply create an avatar to explore their curiosities without finding themselves on the receiving end of judgment.

Virtual life continues to become more widespread as it becomes increasingly (if not more) important than our realities ever have been. We seek solace in strangers behind user names because they too may be going through similar situations (in regards to struggling with daily social woes and the like), or

at least claim that they are. Online play is slowly becoming a matter of preference for the general population, putting the gaming category at the forefront of technological culture. But it is important to ask ourselves: “Are there negative effects of gaming (as it relates to gender) that need to be critically examined?”

One of the downsides to virtual gaming from a statistical standpoint is that, “88.5% of game developers are male and 92% of developers are heterosexual. Also, both female and LGBTQ game developers held stronger opinions that the game industry lacks diversity and that diversity has a direct impact on the games produced” (*Game Developer Demographics*). Therefore, the viewpoint of the majority of games is largely based upon a homogenous contingent of game developers: heterosexual males (Pascoe).

The minorities of the gaming community in terms of video gaming are the women, those within the LGBTQQIAAP community, and the people who identify as gender fluid. With the representation of this demographic being so very small in number, the depictions of characters that represent these characteristics (e.g. female characters, LGBTQQIAAP characters, etc.) are often misconstrued, as they are created to cater to the whims of a relatively heterosexual male populace. Gaming developers create their female characters based off of what they want to see. A recurring theme within the gaming world is that most playable female characters are often portrayed as mere objects for sexual gratification. They’re either scantily clad and over-sexualized in a way that’s highly unrealistic or they’re a means for physical, emotional, or sexual abuse at the whims of the male player or their evil counterpart (the antagonist); examples of this can be seen in games such as “Grand Theft Auto,” “Red Dead Redemption,” and “Watch Dogs.”

Virtual worlds will continue to thrive. These homes of creation are the meeting grounds for people from all walks of life to come together for a common purpose. There is still much work to be done in terms of dealing with prejudices that come with being a member of the LGBTQQIAAP and active gamer community. However, it is easy to mask gender identity and other aspects of oneself that exist on the virtual spectrum. In essence, you leave behind all of your insecurities, the “comfortable” boxes that society carves out for you, so you can embrace the life that you wish to live.

I am of the belief that gender fluidity is a very present thing and should not be simply dismissed. Humans, by nature, are relatively curious beings, and many of us cannot settle with one thing simply because society deems it acceptable. I also believe that we have far too many labels within our society that pigeonhole us into categories that divide us. In terms of sexuality, we have become rather desperate to stake our claim as individuals. If we do not fall under the title of “straight” but don’t deem ourselves to be “homosexual” or “asexual,” then surely there is another means of defining what we are, since society enforces that we must have a label and fit into a category based upon either physicality or behavior.

Sexuality and gender are at the forefront of discussion in today's society, both in reality and on the virtual plane. Accepting gender blindness means that not all of us fit into the binary concepts that others consider acceptable. Sure, being able to label oneself as one or the other makes us human to some extent, but we are far more than the "accessories" that naturally adorn our bodies.

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i am.

Deija West

my culture is art  
my culture stems from battered roots  
but is not broken  
instead a strong foundation  
like the base of a tree  
is built  
i am art

my culture is persistent  
like a soaring oak tree  
we tower over others  
we know that we can overcome  
and that our minds are terrible things to waste  
i am persistent

my culture is unbreakable  
strong as branches  
we sing and we dance  
but most importantly  
we remember  
that we must never forget  
i am unbreakable

my people are beautiful  
inside and out

we decorate the earth with  
our gorgeous deep colors  
our black skin is unlike any other  
therefore we should be proud of it  
not denounce it  
i know that i am beautiful  
like no other



# Ham Sandwich Theorem

Andrew Maloney

## **Intermediate value theorem.**

*If a function  $f(x)$  is continuous on a closed interval  $[a,b]$  and  $f(a)$  doesn't equal  $f(b)$ , then for every value  $M$  between  $f(a)$  and  $f(b)$ , there exists at least one value  $c$  on the interval  $(a,b)$  such that  $f(c)=M$  (Rogawski).*

## **You cut. I choose.**

As kids, my brother and I adhered to a strict rule when it came to sharing. Whatever the commodity, one of us divided it in two and the other got to choose either portion. The system worked better and better as we grew up; each of us developed faith in the other's sense of spatial analysis. When either of us had to do the cutting, we would divide the parts as evenly as possible.

Neither of us realized that this procedure indicated our faith in a key mathematical theorem. Informally, the intermediate value theorem states that if you can give a slice of pie to Andrew, or you can give the same slice to Joe, then you can instead give each brother half-a-slice—and disappoint them both.

It makes immediate sense that we can cut an object in half, provided that we know where to cut. But how can we prove it?

## **How to cut a ham sandwich.**

The Ham Sandwich theorem is a corollary of the Borsuk-Ulam theorem, which states that every continuous function from an  $n$ -sphere into Euclidean  $n$ -space maps some pair of antipodal points to the same point. Here, two points on a sphere are called antipodal if they are in exactly opposite directions from the sphere's center. The theorem is named after Stanislaw Ulam and Karol Borsuk. The first proof was given by Borsuk in 1933, who attributed the formulation of the problem to Ulam ("Borsuk-Ulam Theorem").

One implication of the Borsuk-Ulam theorem is that right now there are two diametrically opposed points somewhere on our planet with exactly the same temperature and pressure. Another corollary of the Borsuk-Ulam theorem is the Brouwer Fixed-Point theorem, which says:

1. If you spread the map of a country across a table anywhere in that country, there must exist a location somewhere on the map corresponding to its own actual position within the country.

2. No matter how much you stir a cocktail in a glass, once the drink settles there will always be at least one point in the liquid that will end up in exactly the same place that it was before you began stirring.

In lay terms, the ham sandwich theorem states that it is possible to slice a ham sandwich exactly in half with a single straight cut so that each portion contains equal volumes of bread, ham, and cheese. In order to understand the theorem, it is useful to first explore a simpler scenario: consider a two dimensional slice of ham. Let's prove that for any angle  $\theta$ , it is possible to cut the slice of ham in half with a single linear cut of incline  $\theta$ . First we'll restrict  $\theta$  to the interval  $(0, \pi/2)$ . We'll slice the ham along a line defined by the equation:

$$y = (\tan \theta)x + 17$$

Let  $A(b)$  be a function of  $b$  giving the area of ham to the left of the line minus the area to the right of the line. Let  $A$  be the area of the ham.

Now imagine a bounding box that contains the ham on all four sides. If the slicing line is positioned so that it passes through the top-left corner of the box, then the entire ham falls to its right, and:

$$A(17) = -17$$

If the line passes through the bottom-right corner of the box, then the entire ham falls to its left, and:

$$A(17) = 17$$

If we assume that the function is continuous, we can apply the intermediate value theorem and show that there must exist a value  $c$  such that:

$$A(c) = 0$$

A line with angle  $\theta$  and  $y$ -intercept  $c$  will cut the ham exactly in half.

### The language of limits.

A troubling aspect of this proof is its use of a bounding box to define positions for which the slice falls entirely to one side of the ham. It is an unlikely approach to a problem that is probably more easily dealt with using the language of infinite limits. Furthermore, some objects of finite area cannot be contained by a box.

Absolutely convergent improper integrals represent regions of finite area and infinite bound. Consider an object filling the area to the right of the  $y$ -axis and confined between  $y = e^{-x}$  and the  $x$ -axis:

$$y = \int_0^{\infty} e^{-x} dx$$

This object is unbounded to the right, yet the entire contained area approaches 1:

$$\begin{aligned} & \int_0^{\infty} e^{-x} dx \\ &= \lim_{r \rightarrow \infty} \int_0^r e^{-x} dx \\ &= \lim_{r \rightarrow \infty} -e^{-x} \Big|_0^r \\ &= \lim_{r \rightarrow \infty} -e^{-r} - \lim_{r \rightarrow \infty} -e^0 \\ &= 0 - (-1) = 1 \end{aligned}$$

Other objects of this type include the area beneath the standard normal distribution curve. Can we show that objects such as absolutely convergent improper integrals are subject to the ham sandwich theorem? First consider a two dimensional (but infinitely long) slice of ham with finite area corresponding to:

$$A = \int_c^{\infty} f(x) dx$$

Let's again prove that it is possible to cut the slice of ham in half with a cut of incline  $\theta$ . We'll restrict  $\theta$  to the interval  $(-\pi/2, \pi/2)$ . Let the equation of the line be:

$$= ( ) + 17$$

Let  $A(b)$  be a function of  $b$  giving the area of ham to the left of the slicing line minus the area to the right. When  $b$  grows very large:

$$\lim_{b \rightarrow \infty} A(b) = - \int_c^{\infty} f(x) dx = -A$$

Therefore, when  $b$  grows large enough, the whole ham falls to the right of the slice and:

$$17(17) = -17$$

Similarly, for very large negative values of  $b$ :

$$\lim_{b \rightarrow -\infty} A(b) = \int_c^{\infty} f(x) dx = A$$

If  $b$  has a sufficiently large negative value, the whole ham falls to the left, and:

$$17(17) = 17$$

Applying the intermediate value theorem as before, there must exist a value  $c$  such that:

$$17(17) = 0$$

The ham is divided equally. Similar arguments hold for values of  $\theta$  on the interval  $(\pi/2, 3\pi/2)$ , and when  $\theta$  equals  $\pi/2$  and  $-\pi/2$ . While most statements of the ham sandwich theorem stipulate that the sliced objects must have the property of compactness, or that they must be bounded objects, the proof above appears to work for objects corresponding to the areas of absolutely convergent improper integrals.

### **Insult to injury.**

My brother and I never let our protocol for sharing interfere with a good fight. If we fairly divided the pie, we could still come to blows over who should get the last of the whipped cream. What about two objects? Can we divide them both in half? With a single slice? Joking apart, it seems like a single line should be able to cut two objects in half, as long as the angle and position of the line are suitable. But how do we use the intermediate value theorem to prove it?

Consider the slice of ham from before, but add a slice of bread. Plop it down wherever. We have just shown that there must be a line with slope  $\tan(\theta)$  that cuts the ham in half. For such a case, we can apply our area function  $A(b)$  to the bread.

$$17(17) = 17$$

There's no reason to think that the bread will be cut in half. If we now consider a related case where the angle  $\theta$  is rotated by  $\pi$  radians, this will also slice the ham in half, and our area function with respect to the bread will give us:

$$17(17) = -17$$

$A(b)$  changes from a negative value to a positive value (or vice versa) when the orientation of  $\theta$  is flipped, since the area of bread on either side of the slice is reversed. Using the intermediate value theorem as before, we can show that for some  $\theta$  and  $b$ :

$$17(17) = 0$$

and the line bisecting the ham will also equally divide the slice of bread.

### **With a Cherry on Top.**

But what about a real ham sandwich? It turns out that the ham sandwich theorem can be generalized for higher dimensions: Given  $n$  measurable “objects” in  $n$ -dimensional space, it is possible to divide all of them in half (with respect to their measure, i.e. volume) with a single  $(n - 1)$ -dimensional hyper-plane (Ham Sandwich).

All this math is making me hungry.

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# *Lysistrata* and Gender Roles in Ancient Greece

Juan Carlos Peralta

The comedic play *Lysistrata*, written by Aristophanes, is a satire addressing the problems of war in ancient Greece and the gender roles of both women and men in society. The play begins with the main character Lysistrata calling upon the women of ancient Greece and explaining that in order to establish peace and stop the men from going to war, the women must refrain from sex with their husbands, while seducing them so the men will covet them. The women agree and unite; as a result, they gain control of the citadel and the treasury which makes them in charge of the finance and city-states, and which the men find upsetting. The men, no longer able to tame their sexual desires, submit to the women and sign a treaty to end war between the city-states of ancient Greece, hence bringing peace and great celebration. This play illustrates the gender roles of women and men in ancient Greece, emphasizing the house-bound and dutiful nature of ancient Greek women, the lack of political power of women in government, and the misogynistic and lustful attitudes of Greek men toward women in ancient Greek society.

Calonice explains to Lysistrata that it is “not easy...for women to leave the house” because a woman is “busy pottering about her husband...getting the servant up... putting her child asleep or washing the brat or feeding it”(1). In other words the women in ancient Greek society were seen as housewives in charge of household chores. Consequently, many women were surprised when Lysistrata claims Greece can be “saved by the women”(2). Calonice claims “how should women perform so wise and glorious an achievement” when they “dwell in the retirement of the household”(3). This is to say that women in ancient Greece spent their time at home and were not seen as political figures let alone saviors or heroes. What is more, Lysistrata mentions how the poets depicted women as “good for nothing then but love and lewdness”(8). Women were not seen as political figures but just as sexual beings used to satiate their husbands sexual covets. Moreover, this sexual nature is viewed when Lysistrata states, “I cannot stop them any longer from their lusting after the men”(31). Here we see the women’s acceptance of social norms in ancient Greece and the duty women felt towards their husbands. Also women in Greece were viewed as their husband’s property suggesting that their husbands can take them by force if they deny them sex as seen when Calonice ask Lysistrata, “But if they beat us?”(9).

The women did not play a big role in ancient Greek politics and therefore Lysistrata’s attempt to involve women in government was frowned upon by the men. This is shown when the women conquer the citadel and the men attempt to

burn everything to the ground, leading to the involvement of the Magistrate who tells the women, "But what a notion, to concern yourselves with questions of peace and war," further illustrating how women were not seen as having a place in Greek government(23). To emphasize this issue, Lysistrata explains how women "endured in modest silence" when the men would speak of war and if they voiced their opinion they would be silenced by the men saying "War is men's business" (24).

Ultimately, the satire *Lysistrata* addresses the problems of war and, more importantly, the gender roles of both women and men in society. The play illustrates how Lysistrata manages to unite the women of ancient Greece, convincing them that if they refrain from sex while seducing their husbands they could bring peace to Greece. The men, no longer able to control their lust, decide to do their bidding; in effect, the men sign a treaty to end war in Greece.

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# Penicillin: The Beginning of Antibiotic Resistance

Sally Chan

## Abstract

Penicillin is a natural antibiotic (bactericidal agent) produced from the fungi *Penicillium* species, specifically the strains of *Penicillium chrysogenum*. It is the first antibiotic drug known to man, and since its discovery in 1928, several derivatives of penicillin have been synthesized. It prevents the growth of bacteria by inhibiting cell wall synthesis. Although penicillin was once seen as the “wonder drug,” the abuse and improper use of this drug have led to the increase of antibiotic resistance bacterial strains. To prevent the possibility of going back to the pre-antibiotic era, the use of all antibiotics, not just penicillin, must be heavily regulated.

## Background

The antimicrobial ability of *Penicillium spp.* was first described in 1928 by Alexander Fleming, a microbiologist at St. Mary's Hospital in London<sup>1</sup>. Fleming discovered that one of his petri dishes, plated with *Staphylococcus aureus*, was contaminated by a mold which he later identified as *Penicillium spp*<sup>1</sup>. To his surprise, the area surrounding the mold showed no signs of bacterial growth, indicating that the mold may be secreting a substance that inhibits growth. Fleming published his findings on the antimicrobial ability but he was unable to isolate penicillin. It wasn't until the 1940s that scientists Howard Florey and Ernst Chain from Oxford University isolated and purified penicillin via fermentation<sup>1</sup>. Even with the successful isolation of penicillin, one more problem still remained: the small yield of penicillin from each fermentation process. This problem was solved when Florey and his research team found a more productive strain of *Penicillium* from a moldy cantaloupe. With the tremendous increase of yield resulting from the use of a different strain and nutrient medium, penicillin was ready to be mass produced. Pfizer became the first pharmaceutical company involved in large-scale production of penicillin<sup>1</sup>.

## Synthesis

Penicillin and penicillin-derived drugs all have one general structure: the beta-lactam ring. These drugs are often referred to as beta-lactam antibiotics because the ability to kill microorganisms lies in the beta-lactam ring. The beta lactam structure can also be seen as the combination of amino acids cysteine and valine<sup>4</sup>. The bicyclic structure of the lactam ring and the thiazolidine ring creates a strain and the greater this strain is, the more active and unstable the molecule becomes<sup>5</sup>. The types of penicillin we have are defined by the acylamino acid side chain (R group). When penicillin was first discovered, we were only able to



obtain the product completely through fermentation, but in 1957, the organic chemist John C. Sheehan was able to achieve a complete synthesis of penicillin V. A major problem that previous researchers encountered was the closing of the ring to form the beta-lactam ring. Sheehan solved this issue by using a new reagent DCC, N,N'-dicyclohexylcarbodiimide, that coupled carboxylic acids with amines to yield amides<sup>6</sup>. Today, it is possible to synthesize more effective semi-synthetic penicillin using the same intermediates from Sheehan's experimentation.

### **Mechanism of Action & Application**

Penicillin's main mechanism of action is to inhibit bacterial cell wall synthesis. It interferes with the linking of peptidoglycan, a structural molecule that keeps the cell wall intact and allows the bacteria to develop<sup>3</sup>. The synthesis of the peptidoglycan involves three steps: 1) precursor formation, 2) the accumulation of uridine diphosphate (UDP)-acetylmuramyl-pentapeptide, and 3) the bonding of D-alanyl-D-alanine with transpeptidase to complete the cross-link<sup>7</sup>. The intervention of penicillin happens at the third step. Penicillin is structurally similar to D-alanyl-D-alanine so it is able to bind to the active site of transpeptidase irreversibly and disrupt cell wall synthesis<sup>7</sup>. With a fragile and incomplete cell wall, water can enter the cell, which will eventually lead to the cell bursting or lysis.

Penicillin and its derivatives are still used for different clinical implications. It is more effective on gram positive bacteria like *staphylococcus* infections because 90% of the bacteria's cell wall is composed of peptidoglycan. Gram negative bacteria, on the other hand, should not be treated with penicillin because they have very little peptidoglycan in their cell walls. Today, penicillin and its derivatives are used to treat a variety of disease such as otitis media (ear infections), streptococcus pharyngitis (strep throat), sinusitis, and bacterial endocarditis prophylaxis<sup>8</sup>.

### **Antibiotic Resistance**

Penicillin was once considered the "miracle drug" because of the impact it had on the world during World War II. People were no longer dying from the now easily treated conditions such as strep A throat infections. Amputations were no longer common among soldiers because penicillin was applied on open wounds to prevent the spread of infection. However, according to the article "Origins and Evolution of Antibiotic Resistance," several years after penicillin was discovered, researchers identified penicillinase (beta-lactamases).<sup>2</sup> Beta-lactamase is an enzyme that actively cleaves the beta-lactam ring, which holds the antimicrobial ability of this miracle drug, rendering penicillin useless. As the antibiotic became more widely accessible, new strains of penicillin-resistant bacteria became more prevalent like the penicillin-resistant *streptococcus pneumoniae* and the more serious penicillin resistance *staphylococcus aureus*. As a way of controlling the increase of antibiotic resistance towards not only penicillin, but other market drugs, health organizations have proposed the

following: strictly control use of antibiotics and sharing of antibiotics between people; an accurate prescription for the correct diagnosis; and controlling the use of antibiotics in the agricultural industry<sup>2</sup>.

## Conclusion

Overall, the health community has recognized the dangers that can arise from the abuse of antibiotics. More and more strains of nosocomial and community-acquired infections are becoming resistant and harder to treat. If this continues, the world will fall back to the pre-antibiotic era where lives will be lost to easily treatable diseases. The development of resistance is something that will eventually happen over the years, but the goal is to slow this progression. People need to be more educated about both the risk of not finishing their antibiotic therapy and the over-use of antibiotics. Prevention of antibiotic resistance has now become everyone's responsibility.

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# Learning the Value of Empathy

Angela Poulter

The most influential advice I've received in life, I credit to my father. I was visiting him in Puerto Rico for a summer when I was around eight years old, and for the first time in memory I saw people begging in the streets for money. They would come up to our car and start washing the windows and shove bottles of water into the open ones. Someone pointed out a small enclave of trees to me at the corner of an intersection, where he claimed these aggressive beggars "shot up" drugs when people gave them money. Having grown up in a small farming town in Pennsylvania, this was something beyond my realm of experience. I grew wary of these men and women and made it a point to always avert eye contact in passing. On one such occasion, I was in a video store parking lot with my father when we were approached by someone begging for money. I remember rolling my eyes at my dad and shrugging off the man's words. As we neared the video store my dad turned to me, a concerned look on his face, and asked me why I rolled my eyes at the man. I replied simply, "Oh, he just wants money for drugs. I know I'm better than him."

My dad's expression shifted from concern to anger, "My daughter, you are no better than anyone, and I never want you to think that you are. That man on the street knows things that you don't. He has a different experience and a different life, and you don't know what he's been through. He could have the ability to save your life, and you should never disrespect another person's life or worth."

I was ashamed and transformed by his words. I had never considered life from this angle of pure and just equality, regardless of societal status. I had never thought of how we are all altered by life's experiences, trials, triumphs, tragedy—and how we all contain the ability to change our lives and do "good" and "bad" things simultaneously.

From then on, I looked at people differently. All people. And I continue to try to recognize the life behind everyone's eyes and the unique and dynamic qualities each set could encompass. With this concept in mind, it's vital to recognize how a person's priorities can be affected by change and circumstance. As an aspiring health care professional, I realize that it's important to empathize with my patients and to understand that their lives may be prioritized differently from my own. We cannot expect to always know what's going on in all aspects of a person's life, and we should not pass judgment on an individual's decisions. Our job is not to criticize or discriminate but purely to help our patients, educate them, and promote health in a way that is respectful and beneficial to their needs.

I had my own experience with flux in my life last fall, following treatment of pancreatic cancer. I had to withdraw from the Dental Hygiene program at City Tech to have an abdominal surgery called a Whipple procedure. After the surgery, I could not have any food, drink, or medication by mouth for almost two weeks. Everything was administered intravenously. Even though I wasn't having any food, I could still feel a biofilm layer forming over my teeth and I was a bit paranoid about not being able to brush (or do anything) at first. Then, I forgot my teeth altogether. There was so much else going on:

*Alarms go off because I've stopped breathing in my sleep. Again. And I'm pleading with a nurse to stay with me all night because it keeps stopping and I'm afraid. Also my Foley (catheter) keeps getting backed up, causing sudden extreme pain. Nurses come in at all hours with injections and to turn off alarms. I'm pressing a button connected to a PICC line in my neck every ten minutes, for an injection of Dilaudid—just to keep the pain at a 7. No sleep. Can't move. Trying hard to stay alive. Praying I will.*

I was able to see firsthand how life could become so difficult that a person could neglect something otherwise held in high regard. In times of crisis we re-prioritize our lives. Ideally, the crisis will be a temporary state, and the individual will eventually regain the ability to address all of his or her needs. However, this is not always the case. Some unfortunate people will remain in a constant struggle, juggling one crisis to the next.

One thing that I cannot adjust to or become unfazed by in New York City is seeing homeless people. I see them everywhere, at all times of day: sleeping, scavenging, and begging for food or money. And I never feel quite mollified giving my leftovers to someone who sleeps in a box, who does not have teeth, who smells like urine and infection. As every empathetic person probably does, I wish there was more I could do for my starving and suffering neighbors. I wish I could give them a shower, feed them something fresh and healthy and delicious, let them have a mattress to sleep on and walls and a roof to protect them. But there are too many to help, and I don't have money or space or resources to support even one extra person. I see so many homeless with rotting teeth, bandaged ankles, and swollen festering wounds— that sometimes I find myself trying to stop seeing them, as I did when I was first exposed as a child in Puerto Rico. Trying not to make eye contact and admit to us both that I cannot help them. Almost regressing and becoming less sensitive to those less fortunate and assumedly vastly different from me. One homeless man revitalized my lens on the world, however, late one evening on my way home from work.

I was tired and walking home past a liquor store, when a man in front of the store started to speak to me. I was ready to ignore him, assuming he would ask me for change that I didn't have. I didn't hear him the first time, so he repeated it louder from behind me, "Long day at work?" When I realized he was trying to make conversation, I turned around and spoke to him, apologizing,

“Sorry, yes, very long day.”

“You a doctor?” he asked, eyeing my scrubs.

“No, I work in a dental office.” I replied.

At this, he brightened. “I have all my teeth!” he exclaimed, smiling widely for me to see. He did indeed have a mouth full of beautiful white teeth.

I smiled back at him, “Oh that’s great! Good job! Do you floss?”

He told me he did floss and brushed many times per day. He pulled out his toothbrush to show me.

I wondered to myself where he brushes his teeth or why he chose to prioritize them when the rest of his relatively young body looked much worse for wear.

As if reading my mind he added, “I don’t take very good care of the rest of my body. I treat it like shit. I drink too much. I know that. My family left me... But at least I still have my teeth.”

I realized it is erroneous to categorize all homeless people into the same huge group of misfortune. They are people. They, obviously, each look and act differently. One might smell bad, or have no teeth, or perfect teeth, or mangled limbs, or wild hair, or frightening expressions.... But as my father imparted to me, all people have different experiences, subsets of knowledge, priorities, disabilities, and abilities. The drunken man who sleeps on the curb may have the ability to disarm you with his perfect smile, and warm you with unexpected kindness. All people deserve to be treated with a measure of respect and sensitivity. Although we are different, we are equal in our chemistry and biology— all made of the same stuff and all entitled to the same kindness and opportunity as the next. Sensitivity is enormously important in acceptance and understanding of others. In any profession, we need to embody the concept that all members of our society deserve to be treated humanely, regardless of physical appearance, social class, or individual principles.

# Intellectual Property in the Fine Fragrance Industry

Matthew Henning

The perfume or fine fragrance industry generates tens of billions of dollars each year (Gannon, 2008), but fine fragrances are very costly to develop, package and market (Cronin, 2009). Though natural products are still used to a limited extent, the trend toward simpler, synthetic ingredients makes it a trivial matter for a competitor to reverse-engineer a scent and sell it at a greatly reduced price (Su, 2014). Understandably, manufacturers have sought intellectual property protections on their products and product ingredients, with varying degrees of success. In the U.S., fragrances are not protected by copyright. In Europe, copyright protection has recently been extended to scents. This paper explores the intellectual property protections currently available in the industry and recent legal challenges that have ignited a debate among fine fragrance manufacturers, their competitors, and skilled individuals who compose fragrances.

## **Information Security in a Changing World**

Just as manufacturers of foods, beverages, and pharmaceuticals seek to protect their products from imitation, perfume makers have long protected formulas “simply by keeping them secret,” closely guarded by a few employees or family members (Cronin, 2014). Before 19<sup>th</sup> and 20<sup>th</sup> century technological advances, perfumes were composed entirely of natural products, often difficult-to-obtain and expensive essences of flowers, leaves, roots, and animal secretions. Ingredient scarcity itself likely provided some measure of security.

Around the turn of the 20<sup>th</sup> century, the burgeoning petroleum industry provided chemists with the means to recreate or approximate natural products cheaply. Petroleum-derived synthetic materials began to be appreciated in their own right, as when Ernest Beaux used a cheap, simple petroleum-derived molecule to create the fizzy top note of Chanel NO. 5, a luxury perfume based primarily on natural rose and jasmine extracts (Cronin, 2009). With time, manufacturers embraced the use of synthetics, which were not only cheap but could be engineered to be safer on skin, or to better withstand degradation by light and heat. The era of modern fine fragrances had begun.

Modern perfume formulas can contain well over one hundred ingredients (van Asten, 2002), but widespread use of synthetic materials presents an information security problem for fragrance manufacturers. Unlike natural essences, which are extraordinarily complex mixtures, synthetic ingredients are single molecules. Synthetics “can be read with incredible ease by reverse

engineering tools, such as a gas chromatograph.” (Su, 2014). Today, without resorting to theft, a competitor can analyze and reconstruct a fragrance molecule for molecule, selling the reconstruction as its own product.

### **U.S. Law and Fragrances**

The two strongest intellectual property protections available to unique works are patent and copyright, both of which grant exclusivity for a finite period, incentivizing creative investment. Patent law protects useful inventions, whereas copyright protects works of creative expression, i.e., non-useful works. Just as drug manufacturers can patent their useful products, a chemist (or fragrance company) developing a novel molecule may patent its *use* in a scent. However, scents created for aesthetic purposes cannot be patented under U.S. law, because they do not meet the standard of utility (Su, 2014).

U.S. copyright law provides protection for creative works “fixed in any tangible medium of expression” (17 U.S.C. § 102, 2012). The problem for fragrance manufacturers is the highly subjective human experience of scent. In Cronin’s (2014) words: “... perfumes are not original expressions of authorship because human olfaction is too crude to allow us to perceive and describe fragrances in anything other than broad terms.” (p. 435) Thus, in the U.S., there is nothing to prevent reverse-engineered fragrances from entering the market, which indeed happens on a large scale as “copycat” or “replica” fragrances (Su, 2014). How do manufacturers protect their products?

### **Tricks of the Trade**

U.S. Code provides protection from the theft of trade secrets (18 U.S.C. § 1832, 2012), such as the secret formula of Coca-Cola. Trade secrets offer manufacturers a measure of protection, but advances in analytical technology have rendered the direct theft of a formula unnecessary. Instead, fragrance manufacturers develop and patent single synthetic molecules with unique olfactory properties. The molecules are not sold to other manufacturers, but kept “captive” – used only in the patent holder’s products – for the duration of the patent. Exact replication of the product would require the captive molecule, which is protected by patent (Su, 2014).

Distinctive packaging forms the bulk of protections sought by fine fragrance manufacturers (Seville, 2007). Trademarks are words, symbols, or designs used to identify and distinguish the goods of one manufacturer from those of another (15 U.S.C. § 1127, 2012). A competitor may legally sell a replica fragrance, but must take care not to infringe upon the name and packaging of the original, so that consumers may distinguish the two products.

### **Legal Challenges**

In a 2004 decision, a Paris court of appeals found that Bellure NV, a Belgian perfume maker, infringed upon and took unfair advantage of L’Oreal’s trademarked packaging and designs of 12 of its fragrances. Bellure NV appealed and lost the case. The higher court not only upheld the lower court ruling, but

found that L’Oreal’s *fragrances* could be protected by copyright: “The French copyright code doesn’t specify an exhaustive list of works eligible to be protected by copyright and doesn’t exclude those that can be perceived by smell. A perfume can be a work of intellect protected by the law when it’s original.” (*The Toronto Star*, 2006).

A similar battle reached the Dutch Supreme Court in the same year with *Kecofa v. Lancôme*. After losing a trademark suit against a competitor, Lancôme sought protection under copyright. Seville (2007) writes that the Dutch court abruptly reversed a long history of “unfriendliness” of copyright law towards scents. The court declared Lancôme’s perfume TRÉSOR protected by copyright, and Kecofa had infringed the copyright by using 24 of the 26 ingredients contained in TRÉSOR. The court used scientific evidence as a basis for its decision.

An interesting change in perspective is provided by a third case, which reached the French Supreme Court in 2006. In *Bsiri-Barbir v. Haarman & Reimer*, the court considered the work of a Nejla Bsiri-Barbir, a former employee of Haarman & Reimer (now Symrise). She claimed Haarman & Reimer continued to market and profit from her artistic creation, and was owed royalties on their income, even if she was no longer employed by the corporation (Sciolino, 2006). The court found Bsiri-Barbir’s work ineligible for copyright protection, reversing the lower Paris court’s ruling.

The European cases have spurred debate over the utility of copyright in fragrances. Seville (2007) argues that differing protections create an impediment to the free movement of goods within the European Union. Su (2014) argues these cases can form the basis of more nuanced, *sui generis* copyright protection custom-made for fragrances. Field (2004), reacting to the first French appeals court decision, argues the best venues for manufacturers seeking protection are legislatures rather than courts. Field concludes with U.S. Supreme Court Justice Stapelton’s remark:

Courts have twisted themselves into knots trying to create a test to effectively ascertain whether the artistic aspects of a useful article can be identified separately from and exist independently of the article’s utilitarian function (30).

### **What Next?**

Parallels may be drawn between fine fragrance and fashion design. Indeed, many fashion designers receive valuable income by licensing their names and brands directly to fragrance manufacturers (*Fashion Law Wiki*, 2009). Both industries produce luxury goods that are widely imitated, using cheaper raw materials. Again from *Fashion Law Wiki*: “These very different products are not in competition with each other – they are in separate market sectors geared towards different consumers.” Elavia (2014) agrees. She claims the consumer base for fragrances is already differentiated, and current trademark protections make it clear that replica goods are not exact replicas; that is, there is no consumer expectation of equivalent quality.



Elavia also points out fashion design industry norms that promote a “culture of sharing” –she argues that tiered, discrete markets drive, rather than stifle, innovation at the top. Certainly, copyright protection for fragrances would eliminate entire sectors (and many jobs) built around consumers who have no access to the luxury market. To Elavia, the relative harmony seen within fashion design industry is an important argument against the extension of copyright to fashion design. In the case of intractable disputes, she proposes a licensing model, as is used in the film and music industries.

### **Conclusion**

The modern fine fragrance industry is highly profitable but requires significant investment in development, marketing and advertising. Current U.S. law does not provide copyright protection to fragrances. Though fragrance formulation may be the result of considerable creative effort, copyright protection is difficult to justify because of the subjective nature of the human sense of smell. In response, manufacturers have looked to other means to protect their products, such as trademarked packaging and patents on individual ingredients. Recent European court cases have reignited debate on fragrance copyright. In the meantime large mass-markets for imitative products have emerged; these would be directly impacted by extension of copyright protection to fragrances. In the U.S., the current climate among fine fragrance manufacturers and their competitors is one of uneasy coexistence.

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# Course Reflection: Analysis of the Experience of Visual Perception

David Tejada

*Design and Color* is the kind of class that sets the foundation for visual perception, helping students understand the basics of what they want their audience to see. A design tells a story without words, is able to create life with and without color, and makes a humble piece demand attention. In this class, I expected to learn how simple mechanisms and shapes can help design more ambitious projects, like architecture or motion pictures. I ended up getting something different (and I'm conflicted as to whether this difference is minor or major). When I entered this class, I was surprised that the primary focus was drawing the perfect square. At first this seemed rather strange but I humored it, since it fell within my idea that grand designs start with small foundations. A small square could always lead to something bigger.

The professor likened these squares to perspective in advertising. I learned about proper placement, and how to catch my audience's attention by relying on a subtle type of environment, something that gets right to the point of the product in question. It is with this mindset that I found that drawing a square is easy, but drawing *the perfect square* requires practice and has its own blueprint for success. So I handed in my square the best that I could, and we moved on to broader subject, such as 3D, pattern, and rhythm. In the long run the shape that the majority of the class, myself included, relied upon was... the square. The square turned from a menial objective into a trump card as it was the one that allowed me the most practice. And working on the perfect square helped us understand when the professor kept emphasizing that it should not to be "too literal."

For example, we were tasked throughout the semester with tackling squares and circles in different perspectives, such as 3D. But we didn't want to just show a 3D square or a cube, that's too blatant. No, we wanted to capture our shape in the beginning of its transition, where it can give the perspective of 3D without being "in your face" about it. And, of course, this approach extended into other projects such as rhythm and pattern. We wanted to focus on the shapes working in harmony with our ideas; while they may just look like squares to the untrained eye, artists would see the true statement in our art.

As time went on in the semester, many students made great stride in perfecting their shapes, with factors such as draughtsmanship and margins. Our measurement skills increased so much that many were able to tell if a shape was misplaced by even a 32<sup>nd</sup> of an inch. We made progress without even realizing it. With so much practice on the black squares, we had shifted, though not without

struggle, into the format of using designer gouache (a type of paint). We finally entered the phase of personal design.

This is it! Our chance to show our true colors through our own narrative. We each had to make our own take on "Going Green." We were being tested on making a story with the principle of Bauhaus (less is more), and also on our overall ability to make a design that would be immediately understood, without inconveniencing the mind in any way, shape, or form. A clashing of great ideas was in the works, and one could feel the striving for perfection in the air.

And so, with many months of training, it dawned on me: the purpose of this class. It is to provide us, the students, with mental preparation for the bare necessities of what makes good design. While I may not have made any grand imaginative designs in the class, I learned exactly what I need to make them. And I believe that *that* is what this class is all about.

# Senbazuru

Carolyn Chen

Do you know the meaning  
Of 1000 paper cranes?  
A thousand years of happiness,  
A good luck charm,  
A wish to be granted, or  
The gift of eternal good health.

A colorful sheet of squared paper becomes a mystical creature,  
Waiting to join its remaining allies,  
    To unite their powers of magic.

Dedication and patience from folding  
Strengthens the mind, and gives  
The creator a reward she deserves  
As she summons  
The enchanting bird.

At the break of dawn, multi-colored squares surround me  
Under this sole cherry blossom lost in a sea of Oaks,  
Is where I feel at home.

“Look at that girl wearing the blood red kimono.  
This is America, you’re no longer in China.” I would hear each day.  
“I’m Japa-“  
    “Same thing, you chink,” they’d interrupt.

Cross-legged beneath this sole tree,  
Fighting back tears as I’m endlessly folding.  
Paper cuts here, and paper cuts there.

Anticipation takes the form of tiny droplets  
Dripping down my face as I finish the last one.  
Where are you? Where’s my wish?  
There’s no crane, there’s no magic, just me.

The moon peeks through a cloud.  
There’s a stillness in the air. No laughing, no mocking.  
I tie the last one to the tree then I lie down and face the stars,  
Taking in the chirping crickets, and the chill of the quiet breeze.

Tomorrow is another day.

# Breaking the Cycle of Poverty

Louis Aguiar

In the article “Why Poor Students Struggle,” Vicki Madden says colleges are more divided by wealth than ever. When low-income students start college they struggle from big factors such as social isolation and alienation. After having a conversation with former students, Madden found out that some didn’t go to college after high school and decided to take a school year or semester off. Others are attending Franklin, Marshall, Barnard, Bard and Colby. Madden says, “To stay four years and graduate, students have to come to terms with the unspoken transaction: exchanging your old world for a new world, one that doesn’t seem to value where you came from.” Madden says it’s important that high school prepare students for college so they’re ready for the struggle and can overcome it.

In the article “Who Gets to Graduate?” Paul Tough says that low-income students who make it to top-tier colleges struggle to graduate. Tough analyzes statistics and notices that low-income students who make it to top-tier colleges usually fail. Students who are high-achieving students from low-income families want to desperately earn a four-year degree but run into trouble along the way. Vanessa Brewer is one of those students. Tough points out that Vanessa stumbled a month into the school year at University of Texas, Austin on a test in statistics, which she failed. Tough explains Vanessa didn’t have much experience in failure. In high school, she always did extremely well on math tests without studying. Vanessa’s mother raised her to believe that she can accomplish anything. Vanessa looked for reassurance by calling home, but hearing her mother say “maybe you just weren’t meant to be there” made her question her chances of succeeding. Tough says, “Some students do what Vanessa was on the verge of doing: They get into a good college and encounter what should be a minor obstacle, and freak out.”

Tough notices two big trends stand out right away. He sees that many students make it to college but never get their degrees. Also many students simply can’t afford to pay for college. Tough says it bluntly, “Rich kids graduate; poor and working class kids don’t. Tough talks to Vanessa and she mentions the Discovery Scholars program, that gives the right support to help students like her graduate at high rates from an elite university like the University of Texas. The Discovery Scholars Program helps students transition to college. The program provides support, connects students to campus resources, and encourages students through their educational journey. Students will acquire skills to help them succeed. Tough concludes his analysis by saying, “that process isn’t easy; it never has been. But it also reminds us that it is possible.”

Over email, I interviewed Pablo Torres, the Director of Community Engagement at Renaissance Charter High School for Innovation. Torres has been the Director of Community Engagement for five years now, and I've had the privilege to work with him for the past three years.

**Louis Aguiar:** What motivates you to fight for 'Breaking the Cycle of Poverty'?

**Pablo Torres:** I had a good but tough upbringing. Both my parents were immigrants and worked very hard to give me and my siblings a good childhood. Through them I learned the importance of education and hard work. My whole career has been dedicated to breaking the cycle of poverty and it is very rewarding but hard work.

**Aguiar:** What opportunities do you provide to help your students?

**Torres:** Providing a school in which students can be exposed to things they wouldn't have seen otherwise is the primary opportunity I provide... the young men's leadership program, various community service projects, enrichment weeks, the athletics program, after school programs, the remix project, our at-risk programs, restorative justice... I have worked to create a space in which students feel safe and empowered and all these programs are mission aligned to that.

**Aguiar:** How did your journey help you to overcome the statistic expected of you?

**Torres:** I worked hard and went to school and had the family support that was needed to overcome what was expected of me. I think it is a lifelong battle to be honest and I still battle not falling into the pitfalls.

**Aguiar:** Do you think that we could end poverty and increase economic equality?

**Torres:** I absolutely believe we could but it has to be a shared goal of all. Currently, there are so many competing interests and I don't think we share a common vision. Greed is super prevalent and that makes it hard, but if I didn't think it was possible, doing this work would be very frustrating.

Finally, I have known Mr. Torres for five years, and I've noticed he uses the quote "worth fighting for." When I asked him, "What does that mean?" he said:

The quote is... a reminder to myself about why I do the work that I do. I left my previous job and opened this school because I believed that students in East Harlem did not have enough quality education options available to them. I was working on community development in East Harlem and while we were creating job, housing and economic development opportunities I saw that the real gap was in educational attainment. We literally

were providing hundreds of jobs to the community and folks were just not trained to be able to take them. Since moving to East Harlem, I fell in love with it and its people and want to see it better and still believe that it is “worth fighting for.”

Apparently since I am a low-income citizen I am limited in my opportunities and not likely to succeed. My life goal is to prove wrong what the statistics show. However, there are people who want the statistics to remain the same and keep the policies that will keep the poor in poverty. Community leaders like Pablo Torres, along with my family, make me want to be more in life and I refuse to be a statistic of poverty. One question still remains: When will we see the end of the economic inequality and poverty that affects the low-income population today?

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# The World as I C(++) It: Reflections of a Biomedical Informatics Student

Brittany Dhital

*So, what are you going to school for again?*

As an undergraduate in a Biomedical Informatics program, I have had this question posed to me by friends, family, and casual acquaintances so often that I am almost driven to the wearing of a self-ascribing t-shirt. I had once contemplated having my major permanently tattooed across my forehead but decided against it for fear of arousing the ire of my parents: but I digress. I do not fault people for being a little perplexed regarding my career choice and treat the repetitive query with a deal of equanimity: you see my major is not one that is forefront in the common vernacular, indeed it is so relatively new that it has not had the opportunity to engrain itself in the public mind and produce preconceived perceptions. Say the word “doctor” and one immediately calls to mind the image of a white lab coat and stethoscope. Is this even a logical result of deliberate cogitation, I might ask? The last doctor in whose company I was thrown was defrocked of such medical accouterments and was attired in clothing more suited for an afternoon luncheon; and there certainly were no lateral grooves around the back of his neck attesting to long and continuous imprinting from a stethoscope—but I digress again. As I mentioned, different vocations evoke connections in our minds, but the word “Bioinformaticists” meets with no clear association and falls onto the canvas of our minds more like a Monet than a Van Dyck. But in order to appreciate the dynamic field Bioinformatics one must first get a mental bearing, as it were. A few examples should suffice.

First, draw your eyes from this highly engaging dissertation and look in the mirror. This is not some transcendental; it is merely a cursory glance that is required. It is not so much your individuality that is to be assessed but your exclusive membership in the human race. Why are you a human being instead of, say, a gerenuk (which is a member of the antelope species, in case you were curious). Everything you see, and much that you do not, is all a matter of genes, a coded set of instructions, inside each and every cell in our bodies. Everything that makes you who and what you are, in essence, comes from your genes. Sometimes something goes wrong with the code and we get mutations, some of which cause disease. But how do we determine what went wrong? How can we judge what’s normal and what is not? Scientists have discovered a way to sequence an individual’s genome and compare it to a reference point; but this boon has also spawned a hoard of problems with cataloging and analyzing the

large ponderous datasets generated from such studies, the veritable Augean stables of the information world. Making sense of the data is a task for the Bioinformaticist who uses computational tools to organize and store this data in a way that can be easily comprehended, looking for patterns while providing an efficient way to characterize experimental results.

This example may be a little too abstruse for public consumption. Let us try something a bit more practical. Most of us are quite familiar with the vicissitudes of medical prescriptions, and still more have listened with a deal of trepidation to television advertisements regaling the ineffable merits of the latest panacea whose potential side effects—running the gamut from rashes to suicidal thoughts—are listed with the propulsive speed of a caffeine-infused auctioneer at 90,000 rpm. And when all is said and done, do we really prefer liver damage over occasional eructation (*belching* in the vernacular)? These hazardous side effects result from the manner in which the cells in our bodies bind to the drug and assimilate, or process, it.

Another possible venue for Bioinformaticists is in the world of drug design. By constructing computer generated 3-D models of the drug and its target, simulations, run in real-time, can provide insight into potential drug efficacy and guide scientists in developing highly specialized medications and possibly minimize the risk of severe side effects. And with the increasing drive towards personalized medicine, by merely sequencing an individual's genome, scientists will be able to create highly specified drugs tailored to address that person's unique health issues.

So, maybe I am not your typical student; and maybe I do think in terms of R scripts, Python packages, and NAMD simulations. Perhaps the idea of shaping the future from the comfort of my own laptop does not, on the surface, seem plausible: but much of what makes science so wonderful is the significance in small things. I may be a conundrum to those around me, but I have never been more sure of myself: I am a Biomedical Informatics student on the forefront of the future following a path to endless possibilities.

# Soup!

Carlina Rosario

Food has an amazing power over people, it has the ability to distress, relax and make someone happy. It also has the ability to allow people to feel certain emotions and relieve memories and experiences just by being eaten. Growing up food was the cord that tied my family together. I can honestly say most of the most memorable moments in my life were surrounded by food. A large part of my childhood was spent sitting on counters watching various family members cook and receiving impromptu culinary lessons. Some of my favorite memories are making caramel sauce for flan with my dad and learning from my uncle how to make the best Thanksgiving Day gravy ever.

I've always loved winter, which I considered soup season. One of my favorite things in the world to eat is soup. It really doesn't matter what kind; I've always enjoyed them all. Something about soup has always soothed and relaxed me, and given me an overall feeling of warmth and happiness. Personally the best soup experience was when my grandmother and mother would join forces and make sancocho. They would spend hours in the kitchen and I would always sit patiently on the counter watching everything they did, dying for my chance to eat an enormous bowl with white rice. My whole family would make fun of me and thought it was completely weird that a kid was obsessed with soup. My mother loved it because it was the only way she could get me to eat any kind of vegetables. I lived for soup season.

As a child I really thought I was the only person in the world obsessed with soup, but taking culinary classes as an adult I realized I wasn't alone. Taking culinary classes showed me the importance placed so heavily on the productions of stocks, sauces, and soups. So much so that we would spend weeks on end just focusing on each one. Eventually my obsession with soup became an obsession with making perfect stock, practicing endlessly my sauce productions and trying to come up with ways to improve on my soups.

Soups fall into three classifications: clear, thick and specialty/national soups. Clear soups are divided into three parts as well, the first being broth and bouillon, which are clear and flavorful with no solid ingredients included. The second is vegetable soup, which is also clear and includes one or many vegetables; it may also include meat and starches. The third is called consommé, which is a very flavorful and decadent stock or broth that has all the fat removed to make it transparent (Gisslen, 2004).

Thick soups are broken down into five subsections. Cream soups which have a thickening agent added along with milk/cream. Purees are naturally thickened with starches or vegetables; these soups often do not have milk or cream added and are not as smooth as cream soups. Bisques are thick soups made

normally with shellfish and finished with cream. Chowders are normally made from fish, shellfish and vegetables; more often than not, they contain milk and potatoes. Potage is the final type of thick soup and is normally considered to be a thick hearty type of soup. Specialty and national soups are made up of all other soups that do not fit into the previous categories. A soup is normally considered a specialty or national soup when it consists of unusual ingredients only available in particular areas. Cold soups tend to be lumped into this category as well (Walter, 2011).

Making and eating Sancocho with my family allowed me to develop such a passion for soup; hopefully sharing this recipe will help you develop a passion for soup as well!

### Sancocho

#### Ingredients:

1 lb. boneless pork, cut in 1-inch cubes  
1 lb. pork bones with meat  
4 quarts water  
1 tbsp. salt  
3 ears of corn cut in small pieces  
2 green plantains, peeled, quartered, sprinkled with lemon juice  
2 lbs. yucca, peeled and cut into 1-inch cubes  
2 lbs. ñame, peeled and cut into 1-inch cubes  
2 malangas, peeled and cut into 1-inch cubes  
2 white sweet potatoes, peeled and cut into 1-inch cubes  
1/2 Hubbard squash, peeled and cut into 1-inch cubes  
6 oz Sofrito  
2 whole ripe plantains, peeled and cut into 1-inch cubes

1. In large pot, combine meat, bones, water and salt. Bring to boil; skim, lower heat and simmer.
2. Stir in corn and green plantain. Cook 1/2 hour.
3. Stir in yucca, ñame and malanga. Cook 1/2 hour.
4. Stir in sweet potatoes, pumpkin, Sazón and Sofrito. Put ripe plantains on top so they do not dissolve.
5. Cook 1/2 hour or until all vegetables are tender

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# The Learning Experience

Zelda Nelson

I was seven years old when I first stepped on the ice with a pair of old rental skates. Looking back it's no wonder I couldn't stay up that first time. They were so rusted they could not cut ice if an Olympic skater had worn them. But I was persistent. I remember hugging the wall for the whole two hours only letting go after much coaxing from my father only to fall, crawl back to the wall, pull myself up, and repeat. My father would give me the occasional advice; "Bend your knees a little more," or "Don't look down while you skate." I tried, but I remember every time I fell I would note how cold the ice was, and how it was so slippery, nearly impossible for the novice that I was to stand up. It was challenging but something about the ice was fun, so that night when my father asked if I would like to come again I gave him a resounding yes.

I had a short lesson the following week. I remember the teacher was old. She had short white curled hair and was perpetually blowing her nose. She stood stick straight on the ice and despite her age skated like a queen. There were some other kids in the class, all were older than me and I felt intimidated until I realized they were there for the same reason I was, to learn to skate. They all clung to the wall with white knuckles as the teacher skated onto the ice. I remember the first thing she did was take a blue board marker and make some squiggles on the ice while we stared on in confusion. We were to skate to the blue line and stop to the best of our abilities. I was scared as I slowly let go of the wall and pushed myself forward. I kept my knees bent and my head up like my father had told me. I repeated the formula in my head over and over, "ankles straight, bent knees, head up" hoping that it would help me survive this ordeal. Then I fell. I was so close to the blue line that I like to say I technically skated to and stopped on the blue line. It was my first mini-accomplishment, but that didn't stop me from having to do it again and again until I actually got it right and the first lesson was over.

We went again week after week. I ran to put on those same rental skates and was on the ice as fast as was humanly possible. The ice was always bumpy, scratched up from all the other skaters. This made it easier to skate as the ice wasn't as slippery when it had a close resemblance to snow. I was a slow learner and things that took people days took me weeks. I must have spent months learning to stay upright on the ice. I would skate for hours, and that was my key to really learning. Just spending time on the ice, I would stay until my ankles would struggle to stay straight and my knees hurt. I was a turtle on the ice but adamant to change that. Everyone was so much faster; it was hard to stay up as they zipped by me, and a lot of the time I didn't. I would fall every few feet and a

skate guard would have to come and help me up and I would plod on, taking babysteps.

For my next birthday, I got a pair of my very own skates. They were used and a little scratched up but they were mine. With the new skates it became easier to keep my ankles straight and, as a result, I fell less.

Then, after about a year, I got a hockey coach. He gave me lots of drills, movements to repeat over and over on and off the ice to build muscle, agility, and speed. The exercises were physically exhausting and I always had trouble walking when I finally got off the ice. The running joke became that I could skate better than I could walk. It probably still holds true. It was a huge accomplishment for me because it meant... I could skate!

With my coach I learned technique. He began with edges. They are the basics of skating like arithmetic is the basis of math. Without them you can't move on, but until you've mastered it, it's one of the hardest things to learn. Edges are all about using the sides of your blades to do steep turns and that is what makes them hard. Edges are more than just a way to turn and maneuver, I had to learn to trust my blade. I had to let myself glide on a forty five degree angle without freaking out and falling. It was grueling; I would try and try again as the bruises on my sides would accumulate until I couldn't skate anymore. And then I would continue. The feeling of my blade slipping out from under me started appearing in my nightmares. It haunted me. I would walk on a tilt in school without even noticing until someone would comment on my angle. Edges became my obsession until one day, after many failed attempts, I did it. It shocked me so bad I fell moments afterwards, but, like arithmetic, once it clicked so did the world of possibilities.

Edges now gave me the possibility of advancing. I quickly mastered crossovers and hockey stops. Crossovers took a few weeks of getting used to: the feeling of crossing one leg over the other on the ice. Hockey stops were a little harder as they required a bit more finesse. If both blades weren't used they would slip out from under me. But compared to edges they came easily like they had just been waiting for me to finish so they could show up. I got faster, much faster; I became one of the skaters who would zip right by the newbies and leave them staring into the cloud of ice I left behind. Skating became a muscle memory through persistent repetition. It was a rhythm, and when you did it right you could feel it: getting down low when you pushed and coming up in between each stroke. I quickly dubbed the movement, "coming up for air."

Next I learned how to hold a stick and how to get the puck where I wanted it to be without tripping over my own two feet. That meant learning a whole new set of drills; I skated up and down the ice just holding my stick and maneuvering the puck while in full gear just to get used to the weight. Hours would go by and that's all I would have done. I would practice passing the puck between me and another person and even try to get a shot in. I was getting good at handling the stick and the puck without tripping over my feet or losing speed.

I joined the local girl's team in the summer before high school. I had never thought myself short before, but compared to these girls I was what the cat

dragged in. Not to say they weren't nice. They just happened to become monsters on the ice. I was fresh meat and they knew it. Due to my height I got very good at dodging in and out of situations on the ice. Footwork was my new love and I was constantly playing around trying to find new ways to do things more efficiently. The team coach encouraged me and kept me going. I was on a roll of creativity and excitement, and it wasn't stopping. I fell more times than I ever had before. I was covered in bruises all the time. I now learned by playing around. The method of trying and failing and trying again is what taught me most of all. More than any drills I would ever do, playing around was the key.

I still ice skate, though I no longer play on a team or wear hockey skates. I traded mine in for figure skates a year or two ago. I am forever having fun and learning new things on the ice and I don't think that will ever change. As Bobby Orr, the famous Canadian hockey player, used to say, "we focus too much on the competition not enough on the fun."

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# My Womanhood

Chiamaka Odunze-Osawe

The month of August is approaching. This is the month that a lot of young women hate their gender. During this month we have an event called the Mma Festival— during this festival young women's genitals are mutilated. After the mutilation, they have to perform a dance. This dance tells the men of the village that the young women are ready for marriage. My name is Nnenna and I am a victim of female genital mutilation. This is my story:

I am from a village in Anambra State, Nigeria. I live with my parents and my older siblings: two sisters and one brother. I had another sister, but she died at the age of 15. She was a victim of genital mutilation. She died when she was performing her dance. After seeing what happened to my sister, I was scared for my own life. I did not want to be part of the festival. At that time I was 11 years old. When I was growing up my mother told me that circumcision is a good thing; it makes me a woman. My husband will always respect me because of it. On August 6<sup>th</sup> 2003, my mother called me. She told me to get ready for the Mma Festival. I told her that I didn't want to go. She yelled at me. I told her that I didn't want to die like my sister. My mother gave me a shocking reply.

She said, "Your stupid sister died because she was stubborn. I told her not to scream when she was being circumcised, but she wouldn't listen. She caused her untimely death."

When I heard this from her, I became afraid of her. When we were leaving, my mother grabbed me by my hand so that I wouldn't run away. When we arrived the festival site, I saw four girls almost my age crying their eyes out because of the pain they were going through. This made me more scared than I was before. I could hear my heart pounding fast. My mother had let go of me. She was greeting her fellow evil women. This was my moment to run. I was ready to run anywhere, even if I didn't know anybody. I saw that nobody was looking at me. I took four steps back, still— no one was looking at me. I ran.

I heard the women and my mother shouting, "Catch her, don't let her escape!"

When I looked back I saw two guys chasing me. I tried to run as fast as I could. As I was running, I saw my elder brother coming towards me with his two friends.

The men chasing after me started shouting "Catch her!"

My brother started running towards me, I tried to run inside the bush, but I was caught. I was crying, pleading with them to let me go. They carried me back to the festival. My mother saw me. She gave me a huge slap on my face. She ordered three women to hold me down. She gave another woman a sharp razor blade to perform the circumcision. I was shouting, they were beating me.

I heard my mother yelling at me, "Stop screaming you want to die as your sister!" I did not listen to her. When they were done with the mutilation, they sewed my genitalia with a sharp thorn. My mother forced me to drink a local bitter herb. I took a first sip and spit it out. She slapped me at the back of my head. When I took the second sip, I tried so hard to swallow it. Thirty minutes later I was given a native dancing outfit to put on. When it was time for the dance, I was so weak. My mother dragged me to the center of the crowd screaming at me to dance. On the dance floor we were six girls. While we were performing our dance, one of the dancers collapsed.

After the festival, we went home. My mother was singing and dancing. She was singing that her daughter is now a woman.

I asked her, "Why? Why did you allow this evil act to be performed on me?"

She replied, "It was performed so that you won't have pleasure when having sexual intercourse with a man." Tears ran down my cheeks.

In eight weeks, my wound was partially healed, but I was still feeling pain down there. I went through hell those eight weeks. To urinate was really difficult for me. Anytime I was urinating, I was always shouting and crying because of the burning pain. Then, one Saturday afternoon, my parents had guests. They were three old men. They came with drinks, cola nuts, and tubers of yam, one goat, and one chicken. My parents and their guests were sitting in front of the house. I could hear them talking and laughing. My mother later called me. When I came out my mother started calling me pet names "omalicha nwam" meaning my precious child, "asa nwam" my beautiful child. I was surprised that my mother was calling me those names, because I have never heard her say anything nice to me.

My father started with an Igbo proverb: "The dance that falls to the lot of the younger generation is the one that they perform."

He continued, "My daughter, I brought you out here to tell you today is a good day. These men came here for a purpose. One of them said he saw a beautiful flower in this compound, so they have come to pluck it with all these goods." I was confused by his words.

I asked my father, "What does the beautiful flower have to do with me?"

Everybody started laughing. My father replied, "My daughter, you are the beautiful flower. This man here is Chief O., he wants marry you as his 6<sup>th</sup> wife." I started crying. I asked them why? First they violated my womanhood, now they want to marry me off in my young age to an old man. My mother yelled at me. I walked back inside the house. I decided to run to my maternal grandmother's house to stay there. My parents were still outside with the guest when I ran away.

When I reached my grandmother's house, I told her everything. She told me not to worry everything will be OK. She will put a stop to it. I was happy to hear that from her. I did not know I was talking to the devil herself. She told me to go to the room to put my things down and get some rest. When I was

sleeping, I felt someone holding my legs. When I opened my eyes, I saw two big men holding me. One had my legs, the other my hands. I saw my father coming in the room with ropes. He tied up my legs and hands. When he was done the men carried me outside. I saw the chief and my grandmother outside the house. He was opening his car so they could put me inside. I felt kidnapped. My grandmother tricked me. At that moment I hated my whole family. I hated them for the death of my sister. I cursed the day I was born into that family.

When I reached the chief's house, he called out his family. He introduced me as his 6<sup>th</sup> wife. When they saw me, they noticed I was not happy. The women felt bad for me because they went through the same forced marriage. His first wife took me inside the house and showed me my own room. She told me not to worry everything will be all right. The last person that told me that tricked me. So I know everything won't be all right. When I was sleeping I felt someone on top of me. It was Chief O. He had come in to have sex with me. I tried to push him away, but he was too heavy. I shouted, he slapped me. He said I should stop shouting because I am now his wife. So he has the right to sleep with me.

One month later I found out I was pregnant. I was depressed. This was not the way I planned my life to be. Three weeks later, I had a miscarriage. The chief beat me for having a miscarriage. I prayed to God to deliver me from the hands of this man. One month after my miscarriage, I had the opportunity to run. Chief O. had traveled to another village to visit his friend. Before he left, he gave all his wives a lot of money. I waited for everyone to go to bed so that I could sneak out of the house. I wanted to take the night bus to Lagos, so I could get to Lagos early in the morning. Lagos is the largest state in Nigeria, so it would be hard for anyone to find me there. I did not know anybody in Lagos, but I didn't care. I came to Lagos to start a new life. When I reached Lagos, the first thing I did was to look for where to sleep. I saw unfinished buildings. I bought a mat so that I could use it to sleep there. The next day after my arrival, I started looking for a job. I was walking street to street. On the sixth day of my search, I found one. I saw a sign on a gate of a big house. They needed a house maid. That was my opportunity because maybe I could find a place to sleep, eat, and work.

I knocked at the gate, the security man opened up. I told him what I came for. He took me to his madam, the owner of the house, Mrs. Williams. She was one of the richest women in Nigeria. When she was interviewing me, she asked me about myself. I told her my story. She felt so bad. She agreed to hire me. She told me my monthly salary would be 15,000 naira that is about \$100. I was so happy, because I had never held that amount of money before. She said I should move in right away and start working. She said I should go bring my things. I told her that I don't have anything. She told me she will buy me new clothes and shoes. This woman was childless. She had no family. She told me that she was married to an old man when she was young. When she found out that she was pregnant, she ate a local herb that killed the baby in her womb. When she got married to Mr. Williams, she found out she could not bear children. This caused a problem between her and her husband's family. When her husband

died from a deadly car accident, her husband's people wanted to take all of her husband's properties away from her and chase her out. She gave them three properties, saying that was all her husband had. However, her husband owned 15 properties. She took the documents for other properties and left her husband's people. I told her that was a very smart idea.

For six months, I worked for Mrs. Williams, and she showed me so much love. Then she took me as her own child; I was not her house maid anymore. She registered me in secondary school to finish my education, and when I finished my high school education, she sent me to London to continue my studies. I studied business administration, and graduated at the age of 24. She was proud of me. She is the best mother any child could ever have. She died in 2012, leaving me all her legacy, worth billions of naira. That made me the youngest, richest woman in Nigeria.

Even with all the money that I had, I was still not happy. My past came to back to haunt me when I met the love of my life Charles. I met Charles through a friend of mine in London. Charles was a gynecologist, and although he was born and raised in London, his parents were Nigerian. He came back to Nigeria to have his own health care network. Charles always made me feel safe. But the only part of our relationship that I wasn't happy with was our sex life. I didn't know how to tell him that I was circumcised at the age of 16. I was afraid and embarrassed.

One day we were hanging out at our friend's house. They were talking about female genital mutilation victims. I was embarrassed about the conversation, and I couldn't stand to hear it. Suddenly I burst out in tears. Everyone, including Charles, was surprised. They were asking me what was wrong. When I calmed down, I told them my whole story. I told them how I was circumcised, and how my parents married me off to Chief O. I saw one of my friend crying. I also told them that Mrs. Williams was not my biological mother. I told them how she treated me as her own child because she never had one. I had to face Charles to tell him the truth. I told him any time we were making love, I had to fake the sounds because I wanted him to think that I was enjoying it, but I wasn't because I wasn't feeling anything. He asked me why I didn't tell him about this before. I told him I was embarrassed. My friends felt bad for me because they didn't know how I felt.

Two weeks after I told my story, Charles called to tell me some good news. He said that there is a doctor in France who performs reconstructive surgery for women who are victims of genital mutilation. At first I thought I was dreaming. But it was true. I had never been so happy. He gave me all the information about the doctor. I decided to go to France to meet this wonderful doctor. I spent six weeks in France after my reconstructive surgery, and then I went back to Nigeria to test my thing out. The night I came home, Charles and I made love. I was able to feel the moment. I was so happy. I was happy because I got back my womanhood. Before I left France, I had a good talk with the doctor. I told him that there were a lot of girls who are still going through what I went through. I wanted to form an organization to help them. He agreed to form a

group of doctors and nurses to come to Nigeria to help the victims. Before the doctor arrived, I had a meeting with the Nigerian President. I told him my story, and that the practice was still going on. I told him about my plans with the doctor. He was happy with the idea. He ordered the Commissioner of Police to send a lot of his men to arrest all the men and women who were part of this practice: it was the month of August—the time for the festival— so they would be able to catch the people who were practicing this evil crime.

Our organization was successful. We were able to save the lives of thousands of young girls. I built schools for young girls from the ages of 3-17. I also have a program where five girls are sent to abroad to get their college education. I wanted to help these girls the way that Mrs. Williams helped me. She was my mentor. She taught me that education is an important thing in life. Charles and I got married on June 8<sup>th</sup> 2013. As I am writing this story, I am six months pregnant. I will be having a baby girl. I am happy she will live a good life. She will not go through what her mother went through at the age of 16.

*Acknowledgement: The author of this short story would like to thank Hope Aghedo Akoda for her research on the topic.*

# Broken Bottles to Sea Glass: The Evolution of Raymond Carver

Austin Herzing

Known for his raw and honest work, Raymond Carver is one of the most significant authors of the twentieth century. Carver, a recovering alcoholic, was not a stranger to emotional turmoil. His own experience helped to craft truthful narratives that explore characters surviving the pressures of everyday life. His new found sobriety influenced a period of artistic growth where he found a brighter outlook in his writing. Although “What We Talk About When We Talk About Love” and “Cathedral” were written in the midst of this evolution, Carver stays true to his artistic voice by exploring honest relationships with which his audience can identify. In “What We Talk About...,” Carver brings together two couples enjoying what at first seems like a leisurely afternoon of drinks and discussion. Carver opens the story with his central character, Mel, telling of Terri’s abusive ex-lover Ed. Mel argues, “That’s not love and you know it” (What We Talk About 128). While Mel is initially introduced as a stand up guy, we begin to see the degradation of Mel’s character as he continues to down glass after glass of gin. Throughout the story there is a sense that this doesn’t end well once the friends go home for the night. Carver alludes to the fact the Terri has found a different version of what she left behind with Ed in Mel. “Just shut up for once in your life. Will you do me a favor and do that for a minute?” Mel snaps at Terri, shutting her down and shifting the mood in the room (134). Is this a clue that Mel and Terri’s relationship might not be in the best place? Is Mel most qualified in pointing out Terri’s ex-husband’s faults because he can lay claim to them himself?

In a review of “What We Talk About...” David Kubal describes Carver’s work by stating, “underneath all his stories, many told in an alcoholic haze, lies a sense of betrayal; that life has not fulfilled its early promise of peace, order, and love” (460). Terri attempts to justify the love that her abusive partner, Ed, proclaimed for her. Even after Ed threatens both her and Mel numerous times, drinks rat poison, and shoots himself in the head, Terri still says, “It was love. Sure it’s abnormal in most people’s eyes but he was willing to die for it” (131). She pleads with Mel to admit that, “He loved me. You can grant me that, can’t you?” (130). We see that Terri still has a sense of loyalty to her love for Ed. Carver attempts to show us that Terri and Ed’s relationship started out with the best of intentions, and a bit of the initial tenderness for the other person never goes away. It’s as if Terri feels that if circumstances were different there may have been a chance at love. She sits with Ed as he dies because, “He didn’t have anyone else” (131).

Mel continues to pass the bottle of gin around the table leading to a clue as to why he's been sitting and drinking heavily through the afternoon. Terri states, "He's depressed," and suggests, "why don't you take a pill" (138). Terri has experienced this mood from Mel before, and she seems like a timid child trying to make suggestions to make the problem go away. "I think I want to call my kids," states Mel. Terri quickly reminds him that he'd have to speak to his ex-wife and it's probably not something he wants to do right now (138). The couple has had this conversation before and Terri seems to have witnessed the negative outcome.

Although Mel and Terri's relationship can be frustrating to the reader, Carver paints a portrait of a couple that is visceral and raw. The need they each have for the other is an urge that many readers can relate to. By not softening the characters dialogue and actions, Carver is able to flesh out characters that seem to lift off the page, breathing with an ugly clarity that, though hard to look at, is compelling and honest. Carver describes his characters as people "I've know all my life. Essentially I am one of those confused befuddled people" (McCaffery 77).

Throughout the piece there is an additional narrative that helps to illuminate a setting and mood. Describing the light filtering in through the room's window, Carver slowly shows how the afternoon is progressing: interpersonally in the room, as well as literally as the sun goes down. It's as if Mel's self-deprecating drinking is sucking the light out of the room, leaving the group in a still darkness by the end of the story. "I could hear the human noise we sat there making, not one of us moving, not even when the room went dark" (What We Talk About 139).

In an interview on *The New Yorker* podcast, David Means describes Carver's writing reminiscent of, "little shards of narrative glass." Carver's work "Cathedral" possesses this cutting sharpness, but the edges have been dulled a bit. The relationship between the narrator and his wife seems strained but without dialogue to go with it. When the narrator's wife wants to invite Robert, an old friend of hers, to stay with them, the narrator is terribly uncomfortable. "A blind man in my house was not something I looked forward to" (Cathedral 209). Even though the narrator has hesitations, he allows his wife to invite her friend to stay a few days with them.

The night begins with "three big glasses of Scotch" and continues with the trio eating dinner, "like there was no tomorrow" (217). They then sit to converse in the living room. There is an animalistic quality to the start of the evening with all three characters devouring their food. The narrator brings out a joint and Robert, the narrator, and his wife all smoke in silence. Soon the narrator's wife is off to bed leaving the narrator alone with a man he's uncomfortable around. As the two men sit together in their marijuana-induced fog, a program about cathedrals comes on the television. The narrator ponders whether the blind man even knows how to grasp the concept of a cathedral and the blind man asks that, "Maybe you could describe one to me?" (224). The narrator does his best but gives up, which gives the blind man an idea. He asks

for a sheet of heavy paper and a pen. With the blind man's hand over his, the narrator draws a cathedral to the best of his ability. As they draw together, the blind man instructs the narrator to, "close [his] eyes now" (227). The narrator continues to draw with his eyes closed and the blind man states, "I think that's it. I think you got it. Take a look. What do you think?" (227). The narrator suddenly feels an overwhelming sense of place: "My eyes were still closed. I was in my house. I knew that. But I didn't feel like I was inside anything" (227). He finally concludes his thought by stating out loud, "It's really something" (227).

At first glance, "Cathedral" seems simpler than "What We Talk About..." but Carver is able to build a complex narrative by constructing the narrator's unprovoked aversion to the blind man. The stakes are high because the narrator wants to do what is right by his wife but something is keeping him from feeling comfortable around this stranger. It's only when he begins to let his guard down and allow himself to see the same way the blind man does that he witnesses a profound shift in perspective. In "What We Talk About..." the light is going out in the room, leaving them in darkness and despair, whereas in "Cathedral" as the narrator shuts out his visual world he begins to see. The hope and optimism that is present in this story is in stark contrast to the feeling of "where do we go from here?" in "What We Talk About..." It's as if Carver, the man, is seeing his world in a new way that is having a large impact on Carver, the writer. That said, we never lose Carver's uniquely honest voice.

"Cathedral" was the first story Carver wrote after he finished the collection of stories that "What We Talk About..." appears in. He explains that, "When I wrote 'Cathedral' I felt this rush and I felt, 'This is what it's all about, this is the reason we do this'" (Simpson 13). Carver seems to have found a new artistic freedom in the optimism he instills in "Cathedral." In an interview with the *Mississippi Review*, Carver describes writing "Cathedral" as "breaking out of something I had put myself into, both personally and aesthetically. I simply couldn't go on any farther in the direction I had been going in 'What We Talk About When We Talk About Love.' Some of the stories were becoming too attenuated." Carver seems to be describing the bleakness of characters in "What We Talk About..." (McCaffery 65). Although the characters are fleshed out and believable, the reader is left with a melancholy that's hard to shake off. In contrast, "Cathedral" provides a glimpse into what we can experience when we open ourselves up to the possibility of seeing our world in a different light.

The pen and paper play as central a role in "Cathedral" as the gin does in "What We Talk About..." Carver explains about the weight inanimate objects have in his writing, "if these things are going to be introduced into the scene at all, they shouldn't be inert.... They should make their presence felt in some way" (McCaffery 72). The paper and pen are a catalyst for a shift in outlook. The gin, a numbing agent that clouds the truth and invites a disconnect between the couples. The pen and paper bring two people together and the gin separates them.

The characters in "What We Talk About..." seem to be moving further and further apart from each other as the afternoon fades into night. Mel is once again in a drunken depression and the codependent Terri is left alone worrying



about what might happen next. The opposite happens in "Cathedral." The narrator's initial aversion gives weight to the ending where he is drawing with the blind man. The simple act of trying something different and venturing out of his comfort zone changes the narrator's world. Carver gives the sense that the narrator will wake differently the next day, whereas his characters in "What We Talk About..." will be caught in an endless loop of this same scenario. This lingering hope sheds light on Carver's emotional condition at the time, regarding his personal and professional life: "For such a long time when I was an alcoholic, I was very unconfident and had such a very low self-esteem.... Every good thing that has happened to me during these last several years has been an incentive to do more and do better" (McCaffery 67). Like the characters in his stories, it seems that putting down the bottle and picking up the pen brought Carver closer to finding a sense of personal truth.

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# Epigenomics: Unraveling the Mysteries of Gene Expression

Faizan Malik, Dhavin Singh

Epigenetics is an emerging field in biology that seeks to explain the heritable physiological traits that are not caused by changes of nucleotides on the DNA chain. To better understand the term, the word itself can be broken down into “epi” (Greek: ἐπί), which means *above*, *over*, or *around*, and “genetics,” which is the study of genes and their traits, such as mutations (changes in nucleotide sequence), and their ability to be passed on from generation to generation. Therefore, *epigenetics* can be defined as the study of factors affecting gene expression “above” the DNA, meaning that these factors can alter how genes are expressed without changing the underlying DNA sequence. Such epigenetic factors can be related to the ability of the DNA to interact with its environment (e.g., chemical modifications of nucleotide bases), or with the packaging of the DNA (e.g., chemical modifications of histone proteins).

At this point we must differentiate the terms epigenetics and epigenomics. The term “genome” refers to the total number of nucleotides found in a complete sample of DNA (approximately 3.3 billion base pairs for the human genome), including both coding and non-coding regions, while genes are the molecular units of heredity, consisting of those nucleotides that result in observable biological products. Therefore, epigenetics is the study of non-DNA alterations at a single gene level, while *epigenomics* covers the global analyses of epigenetic changes across the entire genome. In other words, epigenomics is the genome-wide study of epigenetic mechanisms. This is an important distinction that many may miss. The field of epigenomics combines the fields of genetics and computer science, as well as chemistry, mathematics, proteomics and biochemistry to give us an enhanced understanding of gene functions, and has vastly improved our knowledge about genes and their interactions at the molecular level [1].

There are two major types of epigenetic mechanisms: (1) DNA methylation and (2) Histone modifications. DNA methylation is the primary epigenetic modification of deoxyribonucleic acid, commonly referred to as the building blocks of life, or the genetic blueprint. The most common reaction of this type that occurs in mammalian cells is the methylation of cytosine (5-Methylcytosine), where a methyl group is covalently attached to the 5<sup>th</sup> atom of a tyrosine ring via methyltransferases. This is likely to occur at what is known as a CpG island, a special sequence of cytosines and guanines in the DNA chain that can be easily methylated. Almost 70% of gene promoters possess CpG islands, while only 1% of the rest of the genome contains these sites. This means that DNA methylation of CpG islands directly affects gene expression, since it can hinder the binding of transcription factors, providing a mechanism for silencing

or limiting the expression of certain genes. Improper methylation of gene promoters can also lead to pathological conditions. Aberrant DNA methylation patterns have been observed in many human malignancies, such as leukemia, prostate cancer and lupus [2]. DNMT1, DNMT3a, DNMT3b, HCT116, DNMT1 and DNMT3b are examples of enzymes involved in the methylation of DNA, and in which deficiencies can potentially cause diseases and disorders [3].

Histone modifications are also major epigenetic regulatory mechanisms. Histones are proteins that are found in the nuclei of cells and help package the DNA into tight bundles called nucleosomes. They may be exposed to modifications through several enzymatic reactions [4], such as the phosphorylation of serine or the methylation of arginine and lysine amino acid residues. These modifications can affect the degree of closeness to which the histone binds to the DNA, and either expose or hide certain sections of the genetic code for transcription and translation into protein products. Post-translational modifications mostly occur in the amino acid terminals of the histones present in the core of the histone-DNA package. Histone modification types can be determined by finding the number of the alterations, and the regularity or absence of these alterations in the modification of the two templates of the core histone protein [5]. Specific binding proteins can be observed to aid in the identification of histone modifications [6].

Next-generation sequencing technologies, such as chromatin immunoprecipitation (ChIP-seq) [7, 8] and reduced representation bisulfite sequencing (RRBS-seq) [9, 10], help us study these epigenetic mechanisms and obtain a better understanding of the role that these modifications may have in gene expression. In RRBS-seq, a sample of DNA is first treated with sodium bisulfite and then sequenced. The sodium bisulfite then causes a chemical change of unmethylated cytosine nucleotides, converting them to uracil bases, but does not affect the methylated cytosines. This technique yields much faster and more accurate measurements of epigenetic modifications than previously available methods, and is one of the keys to a greater understanding of these powerful regulatory mechanisms. ChIP-seq is another next-generation sequencing method used to capture histone modifications, as well as interactions between DNA and proteins. It involves linking a protein of interest to the DNA, adding antibodies to immunoprecipitate the target protein, unlinking the antibody from the protein, and finally sequencing the DNA. Together, these two techniques have allowed epigenetic studies to flourish, and have placed the field on the cutting edge of biological research.

It has now been well established that DNA methylation and histone modifications can affect gene expression, and researching the relationships between them is vital for understanding normal development and somatic cell programming as well as various pathologies and tumorigenesis [11]. As DNA sequencing is becoming less expensive and more efficient, there is presently a wealth of epigenomics data being produced. Such data, if properly analyzed with the help of bioinformatics and computational biology [12], can teach us more about what makes us the same, as well as what makes us uniquely different. The

biological processes and molecular mechanisms that are responsible for diseases and disorders may be extremely complex, but thanks to the study of epigenomics, we are coming one step closer to unraveling these mysteries.

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# 5Pointz Destroyed: The Irony of Being Vandalized

Justin Alphonso

Who is to say what kind of art is right or wrong? And when does fine art become a crime? I mean, there are multiple artistic styles and many creative minds in the world. Only few artists are recognized though. As for the others, they are at home drawing their guts out, hoping one day they'll get noticed as well. But is that all they can do? Hope? For thousands of years a popular form of art has been around: graffiti. Ranging from simple written words to elaborate wall paintings, graffiti has existed since ancient times, with examples dating back to Ancient Egypt, Ancient Greece, and the Roman Empire. According to author Nicholas Ganz's *Graffiti World: Street Art From Five Continents*, many artists tend to distance themselves from the word graffiti; they believe it is no longer contemporary. Moreover, it often conjures up images of vandalism and defacement, or it is treated as a generic term for street art. Ganz traveled through many countries and found that many artists prefer the term "aerosol art" (2-6).

In New York City, you will inevitably pass a few buildings with signs of graffiti; even traveling by train, there are traces of graffiti on the tunnel walls. There was one area, however, that was perhaps the most famous place for graffiti in New York. This area was best viewed while riding the 7 train by a five-story warehouse known as 5Pointz: The Institute of Higher Burning. It was an American outdoor art exhibit space in Long Island City in Queens, New York, and considered to be the world's premiere "graffiti mecca," where aerosol artists from around the globe painted colorful pieces on the walls of the building. Unfortunately, although it was a beautiful sight where tourists loved visiting, about a year ago it was demolished by the owner Jerry Wolkoff, to be replaced by two rental towers. Some history is needed...

In the article "Wall Hits a Patron of Graffiti," Richard Wier states that 5Pointz, founded by a group called the Phun Phactory, offered graffiti writers a refuge to do their pieces legally, with the landlord's blessing. In the early days of this warehouse's activities, some people were not okay with the group's decisions to make the building a legal area for artist to do their pieces. Chief among its detractors was Mariela Stanton, the chief of the anti-bias and youth gang bureau for the Queens District Attorney's Office, who argued that encouraging people to do graffiti work would just feed their addictions, some of whom were so obsessed that they left their marks on courtroom benches and in jail cells after being arrested for vandalism.

On the other hand, Pat DiLillo, founder of the Phun Phactory project, countered that his organization was not out to end graffiti vandalism, but to give

aerosol artists a legitimate setting to showcase their talents. “This is an art program, not a criminal-justice program,” he said. “We give them a chance to do something positive, when before it was defacing a building.” DiLillo was doing the right thing, keeping these artists out of dangerous subway tunnels, or spraying other people’s property; it was the smart thing to do.

According to Sarah Bayliss, author of *New York Times* article “Museum With (Only) Walls,” 5Pointz had a vision from the curator Jonathan Cohen—tag name Meres—whose dream was to have the building “100 percent covered.” When asked about the name of the building, Meres explained, “It symbolizes five boroughs coming to one epicenter, one point to coincide and create” (Bayliss). Meres cautioned that “graffiti is a label for writers who vandalize. Aerosol art takes hours and days. It’s a form of calligraphy” (Bayliss). So for street artists who have been spraying for years, the term graffiti doesn’t even meet their standards. They want to be accepted and respected as artists—whose work is seen as art, not as a crime. According to Raymond Salvatore Harmon, author of *Bomb: A Manifesto of Art Terrorism*, the idea is about change: “Art is an evolutionary act. The shape of art and its role in society is constantly changing. At no point is art static. There are no rules” (5).

On the night of November 19, 2013, 5Pointz was painted over all white, every piece of aerosol-art was gone, vanished as if by magic—a tragic decision made by the owner Jerry Wolkoff. When Wolkoff was asked, “Whose decision was it to paint over the building?” His response was:

Mine. Let me tell you the reason why: The judge gave me the right to demolish my building. It would take three months. To watch the pieces go down piece by piece by piece would be torturous. In New York, you can’t implode a building. So let me just go in and paint it in one morning, and it’s over with. I had tears in my eyes while I was doing it. I know it seems like a bitter pill to take, but it’s medicine. I didn’t like it, but it’s going to get me better. It’s best for them, and it’s best for me. In my new building I’ll have walls for them to express their aerosol art (Coscarelli).

That said, you would think the owner had all good intentions for these artists, but why would he not tell anyone? At least let them have a last look, a little celebration, something, anything! Whitewashing 5pointz overnight was just an act of a vandal if you ask me, because it was an act of what a typical 16 year old would do, deface a building at night... the irony. Many were heart-broken that morning: shocked and devastated. The fight is bigger than graffiti, bigger than the building; it’s about preserving something priceless, a piece of history and a monument known all over the world.

Leonardo Claudio, author of “Graffiti Artists Face Homelessness: The Battle for 5Pointz Is Lost,” reports that besides the artist who used the building’s walls as a giant canvas, 5Pointz represented hip-hop culture as a whole by hosting an array of events such as break-dancing battles and beat-boxing competitions. But it is more than just the backdrop to many music videos of

iconic hip-hop artists and groups like Grandmaster Caz, Mobb Deep, and Boot Camp Clik— this building has attracted people from all over the world who have come to spectate, create art, break dance, film music videos, and even use the warehouse as background scenes for movies.

If you aren't familiar with the movie *Now You See Me*, directed by Louis Leterrier, it's a must see. Movie productions have been faking New York City locations for decades, but there are a few things you simply can't fake— like an abandoned building that's become a legendary graffiti hub, painted over by countless artists and preserved by devoted caretakers. In the final scene of the movie, four magicians stand on top of an abandoned warehouse, as they perform their last trick. There's no doubt that it is 5Pointz, because there is no other building that looks anything like it, covered completely in art, and right next to the No. 7 train line.

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# Adapting to Climate Change, A Real Property Perspective:

Environmentally-supported Eminent Domain  
Proceedings in Natural Disaster Areas Are Redefining  
the 5<sup>th</sup> Amendment.

Daniel Maples Jr.

After Super Storm Sandy hit the northeast coast, New York State Governor Andrew Cuomo was one of the first political figures to openly acknowledge climate change as a current global threat to both life and property. In front of a world audience, Governor Cuomo stated that he had told U.S. President Barack Obama, “We have a 100-year flood every two years now.” Governor Cuomo went on to say, “There has been a series of extreme weather incidents. That is not a political statement. That is a factual statement. Anyone who says there’s not a dramatic change in weather patterns, I think is denying reality.” New York City Mayor Michael Bloomberg and many other leaders throughout the world agreed with Governor Cuomo.<sup>1</sup>

Natural disasters as a result of weather-related events are more common now and unfortunately more destructive. U.N. Secretary-General Ban Ki-Moon has estimated direct losses from disasters at \$2.5 trillion dollars just in this century alone, with that amount steadily climbing.<sup>2</sup> The effect on real property is undeniable. Coastal storms and floods destroy homes on a grand scale with increasing regularity. Governments are forced to handle the overwhelming task of dealing with real property issues as a result of these natural disasters.

Recently, this task of recovery has presented a unique dilemma. Exactly how does the government respond to natural disasters regarding real property? The answer to this question is not easily accepted. In fact, when this issue of

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<sup>1</sup> Daily Mail Reporter, *Will global warming bring storm barriers to New York Harbor? Bloomberg and Cuomo blame Hurricane Sandy on climate change*, The Daily Mail Online (Oct. 30 2012, 7:20 pm), <http://www.dailymail.co.uk/news/worldnews/article-2225484/Hurricane-Sandy-Michael-Bloomberg-Andrew-Cuomo-blame-hurricane-climate-change.html#ixzz2lmJh2tss>.

<sup>2</sup> Associated Press, *Natural Disasters Have Cost the Global Economy \$2.5 trillion Since 2000*, Business Insider (May 15 2013, 8:10 pm), <http://www.businessinsider.com/un-natural-disasters-cost-25-trillion-2013-5#ixzz2lmRtEwbD>.



governmental response is examined thoroughly a frightening trend is revealed. Governments are using recovery efforts after natural disasters as an opportunity to take real property. An analysis of the recovery efforts themselves will provide the blue print of how the governments are actually doing this.

Governmental entities have a statutory duty to ensure the public welfare of citizens residing in their cities, towns, counties and states. After natural disasters, this duty of public welfare becomes that much more important. Article XVII of the New York State Constitution states, "The protection and promotion of the health of the inhabitants of the state are matters of public concern and provision therefore shall be made by the state and by such of its subdivisions and in such manner, and by such means as the legislature shall from time to time determine."<sup>3</sup> As the constitution implies, there is a real need for the government to be able to control items, which may affect the health of citizens. This includes real property. After natural disasters, citizens are vulnerable to injury and disease from the damage to homes, land, and utilities. It is imperative that the government has the ability to manage these items. Through legislature, the constitution empowers the state and its subdivisions with the means to control real property as they determine.<sup>4</sup> This fact is crucial. The state and its subdivisions determine when and how to control real property. This determining ability is used by the state to maintain the public welfare and perform governmental functions.<sup>5</sup> Unfortunately this determining ability of the state is exactly where the problems first arise. Often, the citizen's right to control their own property conflicts with the government's need to control that same property. Many citizens find it appalling that a governmental body can simply come in and seize their land or their home. Still more do not know the government has this power.

A governmental body can take private property for public use with just compensation. The Fifth Amendment to the United States Constitution addresses the issue of the government's ability to seize private property for public use. This is commonly referred to as the 'Takings' clause. This clause of the Amendment has raised pivotal questions throughout our nation's history. What constitutes public use? By what measure is public use compared when applied to promote governmental agendas? Who determines the value of just compensation? When exactly does governmental control of a property become necessary for the public's use if the public has no access to the property being seized?

Most of the questions raised as a result of the takings clause of the Fifth Amendment are subjective in nature, meaning they are rarely answered in a broad sense. A judge or jury of a court hearing the question provides an answer based on their own subjective viewpoint of the facts applied to previous court rulings. Placing such a responsibility in one or a few people's hands allows those

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<sup>3</sup> N.Y. Const. Art. XVII §3

<sup>4</sup> See *United States v. Village of Farmingdale*, 43 F.Supp. 561 (1942).

<sup>5</sup> See *Bronx Chamber of Commerce v. Fuller*, 174 Misc. 524, 21 N.Y.S.2d. 474 (N.Y. Sup. Ct. 1940).

people to personally justify what they believe is the appropriate solution. There have been numerous court cases which have addressed this slippery slope issue. Perhaps no case has been more important in recent years than *Kelo v. City of New London*, 545 U.S. 469, 125 S.Ct. 2655, 162 L.Ed. 439 (2005).

In *Kelo v. City of New London* (2005) the groundwork for government to speculate as to the future benefit of a specific piece of real property was established. The city of New London wanted to re-develop private real property through the use of a third party developer under the premise such action would better serve the public welfare. The government (the city of New London) was successful. Non-distressed real property was defined as being part of a blighted neighborhood and taken so that it may be re-developed. The future economic benefit of a government's ability to take private property and allow it to be developed by an outside party outweighed an individual's right to that property. Promoting the future public welfare of a community was the determining factor in the decision to take a strategically located property. This manner of justifying the forceful removal of an individual's right to possess property laid the foundation for future rulings so subjective in nature. If a governmental entity can justify public use based on future financial benefit, they can justify taking any property. This justification of future financial benefit will be the new strategy for governmental response following natural disasters.

It is the responsibility and the initiative of the government to direct recovery efforts following natural disasters. However, these recovery efforts following the destruction of private property are complicated and jurisdictional sensitive. After the destruction of Super Storm Sandy, the federal government allocated 2.1 billion dollars to the State of New York to aid with the rebuilding process.<sup>6</sup> The state, in turn, dispersed much of this aid to governmental organizations established to manage property restoration under their own authority. This trickle down effect of financial assistance from the federal government to the local governmental organizations often creates obscurity issues regarding whose interests are really being served. The individuals who own real property damaged and blighted by natural disasters may be left in a vulnerable position.

A few months before Sandy hit, the Biggert-Waters Flood Insurance Reform Act was quietly passed by Congress.<sup>7</sup> This bill authorized insurance companies to dramatically increase premiums in governmentally designated flood-prone communities. In this aspect, property owners in areas with the potential to be impacted by natural disasters are at the mercies of municipal zoning ordinances. Residents with real property in a flood zone designation are subject to astronomical insurance premiums. Many homeowners could not afford

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<sup>6</sup> FEMA, *A Year After Hurricane Sandy, More Than \$2.1 Billion In FEMA Public Assistance Grants In New York Helps Clear Debris, Reopen Public Facilities*, FEMA (Oct. 24, 2013 11:00 am), <http://www.fema.gov/disaster/4085/news>.

<sup>7</sup> FEMA, *Flood Insurance Reform Act of 2012*, FEMA (2012), <http://www.fema.gov/flood-insurance-reform-act-2012>.

to buy flood insurance before the storm hit. And without flood insurance or sufficient reconstruction aid after Sandy, the property will become blighted and subject to condemnation. Once this happens, governments can pursue eminent domain proceedings to take the property. So, in a very real way governments can use this zoning strategy to prevent the rebuilding of private property damaged through natural disasters; therefore encouraging blight and subsequent condemnation. Through the legal process of zoning, the government can promote the decay of privately owned property so that it may be seized and sold to a third party developer at a later date for profit to the city.

This is the first strategy for the government to use legal procedure such as a denial of building permits or zoning a property as flood prone in order to encourage a property's diminished value, eventually making it vulnerable to be taken through eminent domain. The second strategy is actually more solid for the government than the first.

"The legislature shall further provide for the acquisition of lands and waters, including improvements thereon and any interest therein, outside the forest preserve counties, and the dedication of properties so acquired or now owned, which because of their natural beauty, wilderness character, or geological, ecological or historical significance, shall be preserved and administered for the use and enjoyment of the people."<sup>8</sup>

Section 4 of Article XIV of the New York State Constitution says essentially that if a piece of real property is pretty or significant, it can be taken. These are the two governmental strategies to take property. As discussed previously; if real property is ugly and blighted, it can be taken. And as discussed now; if real property is pretty and significant, it can be taken.

In conclusion, the government has every advantage at its disposal to take real property through eminent domain proceedings should it see fit to do so. And this fact alone should be of great concern, especially for homeowners following Super Storm Sandy. If Governor Andrew Cuomo is correct in his assumption. If Super Storm Sandy was only a precursor of events to come and natural disasters become something of a regular occurrence, then eminent domain proceedings will be the new strategy for governments to take advantage of climate change. And one has to wonder whether governments will eventually use this strategy to take property in areas prone to natural disasters even before the disasters occur. Will the entire Rockaway peninsula be designated as a wetland preserve and taken? Will Battery Park City be taken to ensure the public welfare by protecting residents from a future hurricane? Will the old neighborhoods of Coney Island or Bay Ridge be condemned and offered up to bankers so that they may re-develop the properties into strip malls more able to withstand a high tide? It appears if the governments within the state of New York continue to use the two strategies previously mentioned, this may quite possibly be a likely scenario.

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<sup>8</sup> N.Y. Const. Art. XIV §4

# The Drive to Succeed

Alicia D. Singh

Did you know that according to the United States Equal Employment Opportunity Commission, “The Age Discrimination in Employment Act (ADEA) only forbids age discrimination against people who are age 40 or older. It does not protect workers under the age of 40, although some states do have laws that protect younger workers from age discrimination”? (*U.S. Equal Employment Opportunity Commission*).

When I started working with my employer I was 22 years old; I am now 25. I am a single parent with a good job in a hospital and great pay, but I also go to college full time in pursuit of my degree. Why do I do this you may ask? It all started during a staff meeting in my department back when I was 23. During this meeting, we all came together to discuss the usual statistics which included budgets, processes, staffing, etc. Since I was an active part of the department, I used that meeting to contribute the ideas I had about improving all of these things and more. I mean, that was the purpose of the meeting, right? Wrong!

After the meeting was over, I was asked by my senior vice president (who was a lawyer by trade) to stay back and wait for him in his office. In my mind, I knew I hadn't done anything wrong or made any mistakes, so I went to his office and waited with a clear conscience. After a few moments he walked in and shut the door behind him. He began by asking me if I loved working at the organization and I replied yes, very much so. After I replied, he said to me, “You're just a baby and I'm sure this is your first real job, so if you love working here you better stay in your lane.” Immediately I knew he was upset that I had been the only employee on his team to speak up at the meeting, especially because I was the youngest one in the department, but I also knew that was no way to speak to me. Although I wanted to jump over the table and slap him, in a monotone voice I replied, “If I am such a baby and, if in your mind, this is my first real job, why do you and this entire organization depend on me so heavily? I am hardly allowed to take time off, and when I am off, I'm pretty much on call; you guys never leave me alone. Also, before you have meetings with your own boss, I am the one you call to prep you on what you need and run your data reports.” Without giving him a chance to answer, I stormed out of his office, giving him a chance to marinate on what I just said.

I'll be honest, I did cry on my way back to my office, but during that short walk (that felt like an eternity), I realized that if people are going to judge me, it was time to make people judge me for what I'm worth and not by my age or how young I look. Once I got back to my office, it was obvious that I was crying so my co-worker asked me what was wrong and I told her. This co-worker of mine was an older lady in her 50s. When she heard what happened, she told

me it was time for me to either transfer out of the department or resign because it will not end here. We both knew because I stormed out before he could say anything to me, he'd be out for blood. There was another position in the hospital that did interest me and I applied for it. Of course the manager of that department needed a reference and the senior vice president gave me an awful one. He told the manager that I was not a team player; I was rude and disruptive and he was actually looking to terminate me in the near future. Once that news came back to me, within 24 hours, I put in my resignation which consisted of four weeks' notice.

Those final weeks were the worst for me because I had given my resignation with no other job lined up. As a single parent with bills to pay and a little mouth to feed, I didn't know what my next steps would be or where to start putting the pieces together. Thankfully I had enough money saved up to be okay for about six months unemployed. During my time out of work, I went on interviews all of which went great but I didn't get because I didn't have a degree. At the same time I was also getting the scoop on what was going on at the hospital since I had left. It turns out that my leaving the department had a negative impact on the hospital both statistically and financially, since I was the only one who did what I did and no one else knew anything about it. A big part of me was happy but that didn't help that fact that I still didn't have a job. I realized that the best thing to do would be to re-enroll in school and get my diploma.

Funny thing is, a week after I enrolled in school, I got a phone call from my old manager asking me to come back. Not for my old position but for something better. What made the offer even better was that the senior vice president who discriminated against me because I was what he called "a baby" was forced to step down from his position. Turns out, without me around to prep him for his meetings and run his reports and maintain his data, he began to sink further and further into a hole that he dug for himself.

As of today, I am still working at the hospital and I've built a reputation for myself which I am very proud of. I now receive endless recognition from my peers and those in higher places for being the youngest administrator in the facility. And guess what, I'm still young and still aiming for greatness and success.

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# Flannery O'Connor's "A Temple of the Holy Ghost": A Freak, A Cook and a Girl's Moral Conflict

Brittney Gelabert

Flannery O'Connor's short story "A Temple of the Holy Ghost," from her collection *A Good Man is Hard to Find* (1955), is about a twelve year old girl who doesn't approve of her cousins. The girl also has moral issues with herself and uses her Catholic faith to confide in God. I chose this story because the girl resembles an adult more than the innocent child the reader would expect. The girl's name is never mentioned and neither is her mother's. The cousins in the story, Joanne and Susan, who are known to call themselves Temple One and Temple Two, are both considered stupid by the girl. The child thinks she's better than everybody else and talks to her elders with no respect. More importantly, what the girl understands in her thoughts really pulls the story together. The girl thinks she knows everything, but once she hears about an hermaphrodite at the fair, everything changes for her. The girl begins to compare herself to "the freak" (the hermaphrodite) she doesn't know and has never met in person because she's so different from everyone else and says that God has blessed her that way.

In the beginning of the story the girl's two cousins arrive at her house as guests. If it were only one, the narrator says that the girl could have played with one, but since both of her cousins arrive, she has to watch them "from a distance" (236). Although the girl clearly views her cousins with disdain, they catch her interest when they return late at night and mention "the freak" they saw at the fair. She is confused as to how someone could be both a man and a woman. "There are some things," Susan said, "that a child of your age doesn't know," and they began to giggle" (245). The child's cousins are mocking her intelligence. The girl doesn't ask her cousins how it is possible to be both a man and woman because she doesn't want to give into the idea that they know something she doesn't, since she has a big ego. The girl's curiosity, however, gets the better of her, so she asks how "the freak" can be a man and a woman, which Susan explains to her. In exchange for Susan's explanation, the girl is supposed to tell the cousins about a rabbit she once saw giving birth. The girl says that the rabbit spat the babies out of its mouth. This proves that the girl doesn't know everything.

When thinking about "the freak," the girl is mostly talking to God or making biblical references. In her imagination, she hears people's voices in her head; voices she imagines to be coming from the crowd at the fair. The girl didn't go to the fair, however, so, in her imagination, the scene with the crowd and "the freak" becomes a scene in a church. In the girl's imagination, the churchgoers

and “the freak” are praising the girl, almost as if she were a religious icon; the crowd of people in her head is speaking to her in praise calling her “a temple of the Holy Ghost.”

When the girl hears about the hermaphrodite at the fair, she begins to question herself. She wonders if God made her the way she's supposed to be and if she's accepted by him. The girl doesn't feel accepted by anyone else. This is so because the girl doesn't fit in with other teenagers like her cousins; she is still growing up.

The one character in the story the girl seems close to is the cook, who is more like a mother figure to the girl than her own mother. The cook teaches the girl to behave, not the mother. The cook tells her straight out that she's mean: “How come you be so ugly sometime?” (242). You can tell that the girl is comfortable enough with the cook to be truthful with her. The child never tells anyone else that she thinks that her cousins are stupid.

The voices in the girl's head occur when she's praying, lost in thought, or in the presence of God. An important scene where she hears the voices again is near the end of the story when she's at the chapel. Here when the girl is praying, she's being genuine and her mind is empty. She really begins to act as if she's in the presence of God. The girl wants to change her ways and not be so mean to others and not act the way she does. The girl is trying to reach out to God and be a better person.

Unfortunately right after this scene, she overhears a conversation that subdues her into complete silence and thought. When the child's mother is talking to Alonzo Meyers in the car on the way home, the girl finds out that the fair has been shut down. The child had missed going to the fair to see “the freak” with her own eyes. When the mother asks Alonzo why the fair was closed, the child finds out the priests shut it down. The girl is lost in thought when she learns the fair has ended. It was as if she had prayed for the hermaphrodite in church, but is answered by God in a negative way by the fair coming to an end. In her mind, she wonders if she was meant to be the way she is, like “the freak.”

The girl looks out the window and the imagery O'Connor uses is almost as if God is angry: “The sun was a huge red ball like an elevated Host drenched in blood and when it sank out of sight, it left a line in the sky like a red clay road hanging over the trees”(248). The way the narrator paints the scene at the end shows the girl reflecting on her inner thoughts. Then the narrator states that the red sun sank out of sight like the retreat of anger. The religious meaning of the word “host” is the Eucharist/bread (body of Christ) when served at mass. The way that the scene looked after she heard that the fair had closed was like her answer from God.

All these events lead the girl to the realization that she should be good to others. The girl starts out with mixed thoughts in her prayers, but then continues being rude to her cousins. Then the cook questions how she treats people, and the girl begins questioning herself. In the end the girl prays to God that she can be good to those around her and not give so much “sass.” At the end of the story,

she thinks to herself about how the freak show had closed down, and if she is truly meant to be the way she is.

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# Behind Prabal Gurung

Katrina Serald

In the competitive field of fashion, contemporary designer Prabal Gurung is stamping his mark on the industry. Gurung continues to remain on top by producing innovative and abstract garments every season. Prabal Gurung has worked diligently to become who he is today and constantly reinvents himself. In commemoration of his work, he has received numerous titles and awards. Isabel Wilkinson, author of the article, “Suddenly Prabal” argues that he’s “on the brink of becoming a household name.”

Thirty-five year old, Prabal Gurung was born to parents, Baba Gurung and Durga Rana. His father, Baba Krishna Gurung worked as a police officer and his mother, Durga Rana took much interest in fashion and art, similar to the designer (“Prabal Makes Indelible Mark”). As the youngest of three siblings, Gurung was compared to his older brother, but supportive mother Rana always uplifted her son, reassuring him of his uniqueness. She even stood by his side when his peers wouldn’t take his desire to take on fashion as a career seriously. “She always had faith in me,” Gurung tells Shradha Pal of the *Himalayan Times*. This, too, is the reason why his mother is such a source of inspiration for him while creating his collections.

Though Prabal Gurung now lives a fast-paced, lavish lifestyle, his native country has been under constant struggle. Prabal Gurung was born in Singapore and raised in Kathmandu, the largest city in Nepal. Although Nepal is known to be “an urban magnet for power, wealth, and social revolutions” (Zurick), this country is still immensely underdeveloped and one of the poorest countries in the world (Brown). Agriculture, which the majority of the population looks to for job opportunities and food, has been quickly diminishing. Due to the rapid development of infrastructures, many natives have to depend on the shrinking amounts of food and have to look to garment factories for employment. Knowledgeable of Nepal’s circumstances, Gurung tries to give back in any way he can. He constantly tries to outsource production related positions to Nepal in effort to create jobs, any chance he gets. In another effort to enhance Nepal, Prabal Gurung and his siblings Kumudini Shrestha and Pravesh Gurung created The Shikshya Foundation to help provide the best possible education for disadvantaged girls in Nepal (Naughton). Education is such an integral part of a person’s life because it gives an individual a foundation to embark on any goal, be it career wise or a simple life choice. Asked by Kantipur Publications on what plans he had in store for Nepal, Gurung also described how he wanted to create a line to create jobs and opportunities for craftsmen in Nepal. His ideas and current actions demonstrate his love and sincere hope of the best for his country.

In 2009, Gurung launched his own signature label, *PRABAL GURUNG* at the FLAG Art Foundation in Chelsea (Feitelberg). In no time, he was getting recognized for his collection. He's been nominated for the 2010 CFDA Swarovski Womenswear Award, runner up for the 2010 CFDA Vogue Fashion Fund Award ("Will Prabal Gurung"), a finalist of the Cooper-Hewitt National Design Award (Wigham), and Chief Designer of Onward Kashiyama's ICB brand (*Prabal Gurung*). In a short period of time, Prabal Gurung has done so much with his career, and he is getting the accolades to honor it.

"It's a billion-dollar industry that affects the country economically, socially and culturally. I make 98% of my collection in New York City and am generating jobs, so fashion isn't just frivolous for me. I understand levity about it. I also understand the depth of it" (*Prabal Gurung*). Gurung's principles regarding his business choices surround that statement. Gurung is an analytical thinker and takes into consideration how his decisions affect those who work for him and most importantly, the consumer. His main goal is simply to let the world know what he stands for, "...making beautiful clothes" (Wilkinson). Working for Bill Blass and Cynthia Rowley, he was taught how to "to get a handle on fashion's many dimensions" (Feitelberg).

When it comes to the market segmentation that Gurung targets there is really no specific demographic. "I feel like I've dressed every age group, every shape and size, every demographic but the one thing that remains consistent is you look at all of them and there is substance to them," Gurung says. "It's not about age, it's about an attitude" (*Prabal Gurung*).

Based on research on Net-A-Porter, a high fashion retailer in which the Prabal Gurung line is sold, the ideal customer would be a female in her mid to late 30s. His ideal customers also would be considered fashion innovators given they have a lot of influence on others, they're risk-takers and they have a platform to be seen by many. They also will be well connected in areas such as business, media, art, fashion or finance. This ideal customer will definitely have a high net worth being that the most minimalistic dress made by Gurung could cost around \$750, while a gown could run up to \$10,000 (Lwee). This customer may also be a frequent traveler with multiple homes and the capability to shop globally.

"My collection is about well-made clothes; beautiful fabrics, lots of draping and tailoring, an old-school way of making clothes done in a modern way" (*Prabal Gurung*). As seen in all past and current collections, his aesthetics exemplify just that. Prabal Gurung is known for his complex creations. Between the bold prints he uses and the intricate symmetry and draping, his designs go beyond the norm. He also uses various textures of fabrics in garments. Gurung's staple fabrics include silk georgette, jacquards, satin, ostrich feathers (Bowring), and even Swarovski crystals ("NYFW Spring '15").

Prabal Gurung's aesthetics can also be compared to the dynamic duo, Peter Pilotto and Christopher De Vos of contemporary line, *Peter Pilotto*. There is a parallel between Austrian designer, Peter Pilotto and Gurung being that they both focus on the textiles and print of their garments. Whereas Italian designer,

Christopher De Vos concentrates more on silhouette and drape, another aspect in which Gurung focuses a great amount of attention toward. Together, De Vos and Pilotto create such sophisticated designs that favor those of Prabal Gurung's line. They also favor in the same principles of fashion. Both lines are made to solely display each customer's individuality rather than classify them by age. Each customer will bring their own unique spin to the garments "and will wear them with her own expression," says Pilloto.

Although fashion is *evolutionary not revolutionary*, Prabal Gurung definitely brings his own distinct perspective to the fashion industry. Gurung is an important designer because of his organic and real interest in his work. Unlike many top designers, Gurung is actually the creative director of his own line and takes on the responsibility of every aspect of his business. From sourcing fabrics which takes months of research down to the logistics, Gurung has a hold of everything (Sun). These top designers get a lot of publicity and admiration for their collections so I think it's extremely important for them to actually put in the time and effort for those praises. With an artist like Gurung, you know he's worked his hardest, months in advance, to produce a collection suitable for his consumers.

Gurung's passion is also what makes him an important designer. He believed in his work so much that he took on most of the financial burden to establish his line (Wilkinson). Although money was limited, he was still willing to invest in himself. Even to this present day, Gurung uses his own money to support his business. Prabal Gurung is an artist whose love for fashion shines through in his collections. His sculptural shapes and modern dressing are unlike any other, and people love him for it. Between his authenticity and edge, Prabal Gurung is definitely a force to be reckoned with.

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# What is Beauty? *Figure of a Seated Beauty* Versus *Long-Necked Bottle*

Karen Li

The concept of beauty is very biased. There are many factors that can affect the way an individual perceives beauty, such as time periods, culture, or personal interpretations. *The Figure of a Seated Beauty* and *the Long-Necked Bottle* depict different forms of beauty. Both artworks are made of porcelain. *The Figure of a Seated Beauty* represents a human figure, while the *Long-Necked Bottle* is a vessel which is highly minimal and abstract. The two pieces present a strong comparison of how beauty is viewed.

*The Figure of a Seated Beauty* was created by a Japanese artist during the Edo period. She is an intimate “porcelain figure with an overglaze polychrome enamel” created for decorative purposes.<sup>1</sup> She is most likely depicting a female geisha. She is seated in an upright position and painted in vibrant colors with intricate designs.

*The Long-Necked Bottle* was created in 2008 by Lee In-chin at Alfred University, New York. It is stoneware with celadon glaze. It is a bottle of intimate size, created for decoration but can also have utilitarian purposes. Lee In-chin developed this piece as a “modern interpretation of a traditional Korean art form of the Goryeo period.”<sup>2</sup> It has a long neck leading down to a voluptuous body using fine curves. The white-bodied surface has hints of greenish-grey waves and speckles along the top of the lips and the body.

*The Seated Beauty* embodies white as the main undertone color, which is a natural color created by the clay used. The natural color gives her a flawless white complexion, along with her neck, chest, and hands. The white skin is maybe a portrayal of what Japanese might think as the perfect skin during that time period. It is also contrasted by the smooth jet black hair gathered high at the top of her crown and above her ears. She wears a kimono with four visible layers of complex design and color.

Each layer of the kimono is outlined by a red border. The innermost layer is in a solid off-white, and then covered by a full black layer. The two outermost layers have very intricate designs. Using very fine lines, the most visible layer of the kimono has a honeycomb design made up of small hexagons perfectly outlined in red with blue dots in the center. It is also decorated with large flower patterns spread out through the garment painted in red, green and blue. The

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<sup>1</sup> Museum label, *Figure of a Seated Beauty*, New York, the Metropolitan Museum of Art, March 26, 2014

<sup>2</sup> Museum label, *Long-Necked Bottle*, New York, the Metropolitan Museum of Art, March 26, 2014

outermost layer features a design with large green and blue leaves. It is accompanied by smaller golden maple leaves and hand fans with a red structure covered in blue, green, and red cloud-like arrangements. The viewer is drawn in by the multifaceted, abstract and stylized garment.

The *Long-Necked Bottle*, however, is very simple with no decorations or images and uses its mellow tones of almost transparent green and white. The bottle also has a very striking silhouette. A slightly wider mouth of the bottle leads to a slim neck that is about half the height of the artwork. The illusion of a long neck is very commonly associated with beauty. For instance, in Burma, women of the Kayan tribe wear long coils to push their collar bone lower, creating the illusion of a longer neck. The soft curvature of the larger body also gives the viewer a sense of sensual beauty. It embodies the same idea of an hourglass figure or an S-shaped curve in women. These voluptuous curves and the speckles of color draw the viewer's attention towards where the neck and body meet. The simple colors along with its curves give the viewer a memorable image.

Even with its astonishing figure, the *Long-Necked Bottle* has many imperfections. The color is very uneven, causing a striated appearance and the speckled dots do not seem as if they were intentionally done. Upon noticing this, other flaws start to emerge. It becomes very obvious that the neck of the bottle is not completely smooth. It has an uneven surface that makes it look slightly lumpy with a wavy texture. The neck is also not perfectly centered on the body, as it tilts slightly to one side. Although probably not intentional by the artist, the imperfections are purposely left on the bottle. There is a small protrusion of uneven glaze on the middle of the body. When the light hits the surface of the bottle, the shadow makes this imperfection very noticeable. It is deliberately shown to the viewer as it is faced forward in showcase. Although there are imperfections, the outline of the shape overshadows it. It goes to show natural beauty can be with imperfections.

The *Seated Beauty* is a representation of the perfect beauty. Alongside her flawless skin, her features and her garments are produced perfectly. Her hair is symmetrical. Hair is gathered high at the top of her crown with a defined point exactly in the center line of her face. There are also two other sections on either side of her head with points right above ears. Her petite eyes, crescent moon-shaped, make her look like she is smiling. Her eyebrows are finely defined as elegant curved brushstrokes: they frame her eyes perfectly. She has vibrant small red lips that also show a hint of a smile. Her kimono is perfectly outlined and the designs are intricately done using fine lines with no signs of mistakes. The folds in the garments are perfectly portrayed in the surface. The lighting also gives the folds in more defined look.

She is seated in an upright position with her right leg folded in and left leg folded with her knee pointing upwards and slightly to the right. Her right forearm is rested on a stool. Her right hand, arched slightly upwards, looks as if she is playfully touching the edge of her kimono. Her left arm extended slightly outward to the side, with her hand arched as if her fingertips are put under

extreme weight. The slight discomfort depicted by this is still outshined by the perfect composure. Her poise tells the viewer how a perfect woman should be composed and elegant at all times.

The *Seated Beauty* is also shown alongside another porcelain figure, a standing counterpart of herself. The faces and hair look identical to each other. The only difference that differentiates them is the designs in the kimonos. The colors used in both figures are the same. The designs on the kimono still use the same concept of flowers and leaves. This demonstrates the beauty that they embody is meant to be uniform. It is implied that this is the true meaning to beauty.

The *Long-Necked Bottle* on the other hand is placed alongside another long-necked bottle that is black and slightly mattified. The color and surface is completely opposite. It also uses more straight lines in the silhouette, reducing the soft curves. The two different bottles show that beauty comes in all forms. Beauty is not only defined by a uniform standard; it is unique to itself.

Overall, the idea of beauty is purely conceptual. It is different to the eyes of any individual and subjective. In some cases, even small imperfection is what gives uniqueness to an individual or an object and constitutes beauty. Whether a person tries to conform to a standard that is viewed as “the normal” or believes that individualism is the key, beauty is truly in the eye of the beholder.

# The Impact of the Fair Housing Act on New York

Xiomara Munoz

The Fair Housing Act (FHA), passed in 1968, was created with the intention to help minorities, specifically African Americans, gain the opportunity to live anywhere they desired. Although the FHA has made it possible for some people to live in areas they would otherwise have been unable to, it has been difficult to enforce this act. The Fair Housing Act seems to be the solution to the problem of achieving integration; however, it does not solve all aspects of discrimination. Real estate agents and banks have been involved in lawsuits in which they have redlined, steered, and blockbusted prospective homeowners; thanks to the FHA, there is a way for people to get justice when they are being discriminated against. However, there are many people who do not know their rights and walk away without ever seeking a remedy to their problem: the current issue prospective homeowners face is that discrimination is done discreetly through the use of steering.

Steering is the practice of pushing perspective homeowners into neighborhoods with people who share the same race or religion. This practice is alive and well in New York City today. In a 2006 *New York Daily News* article, Erroll Louis exposes a D.C. housing group that came to New York City to observe real estate practices. A well-known real estate company sent black and white testers; however, the black tester was only shown one property while the white tester was shown thirteen properties. The article shows that the real estate agent goes above and beyond for the white tester, whereas the black tester was not given the same treatment. On another occasion, the agent went as far as circling areas the white tester should consider; these consisted of predominantly white homeowners. Although the black tester had better credentials, qualifications, and a higher paying job, the white tester was shown more attention (Louis 47). This expose occurred over eight years ago, but there are still cases in the federal court today dealing with issues of steering.

In a 2009 case, the plaintiff had previously discussed over the phone with the defendant a property that she desired. The defendants were initially nice to the plaintiff; however, once they found out the color of her skin they became "rude and dismissive" (1). The plaintiff offered the defendants the asking price then changed the price to a higher one, which the plaintiff agreed to pay. It became apparent that the defendants did not want to make a deal with the plaintiff. The plaintiff, being a lawyer, went to a friend in the Fair Housing Justice Center, and they sent over several white testers. When the perspective white buyers inquired about the property, their asking price was lower than the



price given to the plaintiff. This case ended in a confidential settlement. Nevertheless, this is an example of how the brokerage firm and the builder try to discriminate and steer the buyer away from the property desired. The plaintiff had the means to acquire the property but the real estate company would not offer to find her any other place to live and were not interested in her patronage. However, they were polite to the white testers and even lowered their asking price. If a situation like this occurs to perspective buyers, they do not know it. The problem is that people are not aware of their rights. In this case the plaintiff was aware of the situation and took proper action. The FHA has made steering into something that is now subtler. Even though there are requirements for the brokers and real estate agents to know, many do not uphold them. There is no real enforcement of these laws unless the client involved has prior knowledge of the FHA.

Cases on steering are very hard to find because as Brian Patrick Larkin writes, "the most prevalent and camouflaged tool used by real estate agents to steer is editorializing. When agents provide their own positive and negative views about certain communities, they can greatly influence a homebuyer based on their status as experts" (1642). In some cases, the buyer does not notice that they are being herded into a particular area that is composed of people of their same race, religion, or ethnicity. Some people may express their concerns about moving into a neighborhood that consists of a certain race. If this is the case the real estate agent would proceed to show them a neighborhood that fits their interests. However, when the buyer does not specify what they are seeking in a neighborhood, a real estate agent talks them out of an area that the buyer would like to see; that is when it becomes steering.

The FHA was created with the intention of helping African Americans to live in any community they would like. It was to help remove the feeling of "frustrated powerlessness" (Larkin 1622) and for the most part it did. In today's society, many communities have different races living together in the same neighborhood. The FHA did help in certain areas, however, it failed to provide a way to enforce its laws at all times. Due to the inconsistency of enforcement there are still many cases of discrimination against race, income, and age that go unnoticed.

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# Svelte Connections: An Artist's Perception of Mathematics

Michael C. Hirschfeld

As a visual artist studying engineering I am interested in where the two fields overlap and the mathematics within. After visiting the Museum of Mathematics in Manhattan, I see the line between the two as significantly blurred. Throughout the museum a theoretical means of discovery common to art and mathematics is seen. Within the context of the museum, we can see multiple instances of concepts originating as mathematical being translated into real world materials that result in great visual effects and create the parameters for personal, experiential discovery. I did not have to go far into the museum to find exhibits that inspired new ideas about the intertwining fields of Math and Art. Sitting adjacent to one another the exhibits *Pattern Mesh* and *Structure Studio*, in two and three dimensions respectively, show paths from mathematical concepts to art and from artistic practices back to math.

In the informational material for *Pattern Mesh* there are examples of artists and designers who have used moiré patterns in their work such as a collaborative work by Patricio Andrade and William Ruffenach as well as a moiré tape installation by Carsten Nicolai who has a whole series of sculptural works inspired by moiré patterns.<sup>1</sup> Unsurprisingly, Carsten Nicolai was trained as an architect, a field that embodies the intersection of numerical figures and aesthetics.<sup>2</sup> I was reminded of an artist I knew in my college sculpture classes who overlapped window screens of various sizes, and a quick Google search of art and moiré patterns yielded the artist Tom Orr who makes installations using a similar technique.<sup>3</sup>

The exhibit *Structure Studio* immediately reminded me of another sculptor I recently came across online named George W. Hart who is also a professor in the engineering school at Stony Brook University.<sup>4</sup> By using numerous computer generated mathematical models, Hart is able to create complex and often organic forms that would very likely be impossible to realize with a purely tactile approach. At the Museum of Math, Zometool Inc. has provided a system for creating structures large and small by using mathematical formulae, and I discovered that George W. Hart is featured on their website for a sculpture he made using Zometool. Additionally, Hart has helped to design the Museum of Math itself. One of the founders of the Zometool's technology was Steve Baer who was said to be fascinated by the work of the architect Buckminster Fuller, famous for his geodesic domes among other creations, which closely resemble many of the forms created using Zometool.<sup>5</sup>

Although math can inspire art it seems that art can also inspire math-related concepts. In viewing exhibits in the Museum of Math like *Shapes of Space* and the *Hyper Hyperboloid*, I recalled one of my favorite sculptors of the late twentieth century Kenneth Snelson. Snelson used the structural principle that came to be known as tensegrity, usually attributed to Buckminster Fuller, to achieve most of his important pieces.<sup>6</sup> After Snelson created his innovative *X-Piece* of 1948 Fuller applied the principle in the development of his famous geodesic domes.<sup>7</sup> Although not purely mathematical, tensegrity has had applications in architecture, and biology; it is interesting to see the mathematical model for the Tensegrity Icosahedron (apparently developed long after Snelson was first working on his sculptures) employing the principle. Both math and art rely on heavily theoretical and conceptual underpinnings to achieve tangible applications and both fields can be applied as a means of discovery in the other. The exhibits in the Museum of Math exemplify this dynamic interplay and allows for greater appreciation of this innate beauty.

*Acknowledgement: Thanks to Professor Satyanand Singh for useful suggestions and recommending this assignment which gave me the opportunity to make these connections.*

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# Time Period in *The Heir Apparent*

## Dionel Then

*The Heir Apparent* by David Ives, presented by the Classic Stage Company (April 9-May 11, 2014) is a play adapted from Jean-François Regnard's original comedy. Eraste (played by Dave Quay) is the hopeful heir to his aging, decrepit, and extremely frugal millionaire uncle, Geronte, played by Paxton Whitehead. The witty servant Crispin (Carson Elrod), along with the aid of frugal Geronte's maid, Lisette (Claire Karpen), plot and scheme together in hopes of acquiring Geronte's estate and savings after his untimely death and rush completion of his forged will. The play is set in France in the year 1708, but contains a number of anachronisms. These anachronisms, an act of attributing a custom, event, or object to a time period to which it does not exist, add relevance for a modern audience. These anachronisms also support the setting of the play in a comedic way, while giving way to deeper meanings and messages that are expressed during the play.

Throughout the play there are several mentions and criticisms of the current state of the American economy and other current event topics, which are all tied into an early 18<sup>th</sup> century European aesthetic. The set design done by John Lee Beatty, showcases chandeliers, drapes, a wooden chest, a grandfather clock, glass bottles, and gold trinkets to establish the wealth Geronte possesses. Geronte is deathly ill but refuses to pay for a doctor and proclaims his health wouldn't be a problem if universal healthcare existed. This brings to light the current state of the American health care system and the impending need for health care reform. This call for universal healthcare is definitely not something a French aristocrat in early 18<sup>th</sup> century France would be saying or asking for. This serves to pass on a message to the audience, to stir talk, and maybe, if the audience was radically inclined, start a revolution, or at least a push for real change. This anachronism also certainly supports the make-up of Geronte's character as being enlightened but nonetheless a senile and cheap old man.

As the play progresses and Eraste and his companions plot to convince old Geronte that he, and not other potential family heirs, should be the sole inheritor to his fortune, Eraste's fiancé's mother, Madame Argante, mentions the plight of the 99 percent when a quarrel between Geronte and Eraste ensues. Madame Argante also orders Lisette to fetch some Kool-Aid (Geronte's medicine) in the frenzy. This anachronism again shines light on the growing disparity between the rich and poor in the 21st century.

Other minor anachronisms occur throughout the play such as the mentioning of Godzilla, a pair of Levi's jeans, suicide by drinking Drano drain cleaner, and pornography. Instead of taking away from the play's setting, these

anachronisms more or less make one reflective and appreciate another point *The Heir Apparent* sets to make with its final scene and epilogue. As all normality is being returned towards the end of this comedy, with a marriage nonetheless, Madame Argante speaks of monetary greed and how the escapades Eraste and his companions underwent made her realize her own wrongs. She exclaims her longing for the days of her youth when she sought culture and experience before gold and riches. Breaking the fourth wall, she exclaims how each and every person in the audience is an heir to this earth and to the experiences it holds for us all. This is one of the deeper messages conveyed as it reveals and suggests to the audience to live a life worth living, to cherish the opportunities we receive in life and not pass them up for huddled amounts of wealth. As the last line of the play is spoken and the actors receive their ovations, still in their 18<sup>th</sup> century costumes of grandeur, they walk off to one last anachronism of a hip-hop beat to end it all and completely return us to the 21<sup>st</sup> century.

# How to Subjugate an Alien Species: A Guide Written by History

Danielle Tinsley

In Octavia Butler's *Dawn* and the Neill Blomkamp film *District 9*, the oppression of both humans and aliens leads to internalized racism, loss of identity, and destruction of the culture of both groups. Each text presents historical examples of oppression through science fiction: *District 9* employs a documentary style of Sci-Fi to tie in with its allusion to South Africa's apartheid, while *Dawn* uses alien abduction to reference the kidnapping of Africans during the slave trade. Both texts expand on the relations between the oppressed groups and their oppressors.

The initial disgust of the aliens in *District 9* leads to the human's use of casual racism. During one of the interviews, a worker at MNU (Multi-National United) says "...well they kind of look like prawns, don't they?" South Africans refer to them as "prawns," the word for shrimp, or a bottom feeder. The use of this racial slur frames the aliens as dirty and undesirable. When we first see the aliens, they are half-naked, fighting each other for food, and living in a slum. What starts as a general dislike turns into complete racial discrimination. Like many other oppressed groups in history, they are forced to be sterile (Wickus even jokes about alien abortion while he orders soldiers to burn their eggs.) This idea of preventing the aliens from reproducing, and revulsion at inter-species mixing, is repeated throughout the movie. Andries du Toit, researcher and resident of Cape Town, South Africa, writes:

...the figures of the aliens are, in a sense, nothing other than the exaggerated, concrete rendering of the way in which racist discourse depicts its objects.... By presenting the aliens to us, not as attractive, noble creatures, by making them half-human and half insect, the film constantly trips us up by making the racist gaze our gaze. It confronts us with our complicity with racism, by making us identify with the perspective of the racist, inviting us to feel the revulsion of the xenophobe ("Becoming the Alien")

The alien's image forces the audience to see a racist's depiction of other humans. They are degraded and isolated from the rest of society. The prejudice against the aliens has created limited chance for them to integrate with humans.

Humans in *Dawn* also face prejudice from the Oankali, an alien race come to Earth to mate with the surviving population. The Ooloi, the third sex in the Oankali race, have the power to see and manipulate the biological makeup of organic species. Because the Ooloi believe humans are "Intelligent and

Hierarchal,” and that this will eventually destroy our race, they feel justified in changing humans to be more like them. Although most of the Oankali Lilith meets are accepting of her, we see the resentment their race feels toward ours through Kahguyaht. Kahguyaht does not bother to hide its dislike of Lilith, even in front of other Oankali. It talks down to her, makes sweeping generalizations about the human race, and assumes Lilith cannot do anything on her own. Kahguyaht probably does not feel what it is doing is harmful in anyway, because it is Ooloi and thinks biology is the only determining factor of behavior. Its treatment of Lilith reflects how the Ooloi, the ones in power in Oankali society, feel humans are an inferior species. The Ooloi’s assumptions about humans affect how humans see themselves.

Because of Oankali racism, humans begin to internalize some of the prejudices they hear. The first character to show this is Paul Titus. He has lived alone with the Oankali for so long that he believes everything the Ooloi has said about humankind. He tells Lilith “Down on Earth...some of them will want to be cavemen, drag you around, put you in a harem, beat the shit out of you” (93). He then acts out these behaviors. Later, after Lilith “Awakens” a small group, more fighting and power-play breaks out. The Oankali feel this is further proof of their intelligent and hierarchal model of humanity, but it is the reaction of scared and hopeless people. All of the people Lilith “Awakened” were interrogated by the Oankali, and were powerless to escape. They lost all autonomy. Because their culture is destroyed they regress to barbaric behavior, and redirect their frustration and anger at the Oankali onto each other.

The same reaction is seen in *District 9*. Like the humans in *Dawn*, the aliens have lost their culture, and now have a formless, chaotic society. Not much is mentioned on the normal structure of society for their species, but it is clear from their technology that they were more advanced than humans. Despite this, in the ghetto set aside for them, the aliens spend more time fighting each other than anyone else. The South African media uses this to their advantage; they portray the aliens as uncontrollable and apathetic. This is clearly not true when seeing his friend die, worrying about his child, and learning his people have been used as experiments weighs heavily on Christopher Johnson. A major theme in *District 9* is the inability for humans to use alien technology. Aside from Christopher Johnson, none of the others seem to be able to use it either. Their weapons could target humans specifically, but were not used even to defend themselves. Most of the aliens have given up trying to fight their situation. They accept the humiliation from humans and then act out aggressively towards each other.

Part of the reason for that aggression is the cat food the aliens are addicted to. Again the media portrays the aliens as strange for liking something humans would be disgusted to eat. What is not said is how cat food is used as a tool to control the aliens. At first it just seems that they prefer to eat it over other foods, but it soon becomes clear that it causes severe drug addiction for their species. The difference between Christopher Johnson’s behavior and the rest of the aliens in the ghetto show how much of an effect the cat food has on them.

Both MNU and the underground market give cat food to the aliens as a way of manipulating them. Wickus uses cat food to bribe an alien whom the MNU wants evicted, saying if he signs his eviction notice he can have a can. The addiction probably hastened the destruction of alien society, because they cared more about getting a fix than their ships or returning home. This is similar to what was done in Harlem, NY and Los Angeles, CA during the 1980's. Like MNU's use of catfood, the C.I.A. profited from the pedaling of crack cocaine in black neighborhoods, both because it destroyed the threat of the Black Power Movement, and it raised money for their war effort overseas ("The CIA-Contra-Crack Controversy"). The cat food in *District 9* is a drug used to repress alien unity.

The Oankali also use drugs to manipulate in *Dawn*. Ooloi know their appearance is shocking to humans, so they sedate the human when they meet for the first time. Ooloi bond with humans not only to reproduce, but to assure humans cannot feel any hostility towards them. When Gabriel feels ashamed after having sex with his Ooloi, he cannot make himself angry at it. Instead, he takes his anger out on Lilith. She notices, and says "He wishes he hated [his Ooloi].... Now, it's me he blames and distrusts.... We're all a little co-opted, at least as far as our individual Ooloi are concerned" (Butler 240). The drugs numb how humans react to their oppressors; they are made to feel calm instead of righteous anger. Again the Ooloi see nothing wrong with this, individual Ooloi might even feel they are helping their mates cope with change. Though the Oankali might genuinely want to help, their methods have lasting psychological effects on those they interact with.

The effect of oppression manifests itself in one of the major motifs in both texts: clothing. Dictating the clothing of a group of people has long been a way of controlling the culture of said group. In both the movie and novel a lack of clothing is used to show a lack of power. In the beginning of *Dawn*, Lilith Awakens naked and alone. She feels humiliated, and begs the Oankali to give her clothes. The material of the clothing she is given is not what a human would make, but something an Oankali would fashion. To have any power, humans must forget their own traditions and adapt to the Oankali's. The biologically altered clothing they create symbolizes how humans must assimilate into their culture. Accepting the clothing is the first step in accepting Oankali culture. Similarly, the aliens in *District 9* must learn to wear human clothing in order to fit into society. The aliens try to replace their destroyed culture with that of the South African's. MNU exploits the fact that aliens did not come wearing clothes—that because clothing is initially strange to them, they are therefore animals. Despite the aliens attempt at fitting in they are still ostracized, and the only clothing they can wear is rags they find in the garbage of their slum.

The destruction of the oppressed group's identity is frequent in both texts. The aliens in *District 9* have taken so much outside abuse it is hard to imagine what they were like before coming to Earth. They've been given English names like "Christopher Johnson," and though they cannot speak it, they understand English. Many of their tools and weapons have been destroyed or



confiscated by MNU. The South Africans have become so obsessed with alien weapons they've eradicated everything else about alien culture. Again, in *Dawn*, humans are forced to forget what they were before the Oankali came. Lilith is given an Oankali name, blending her name and the names of her 'adoptive' parents. What was left of human civilization was destroyed so that humans could start anew. Lilith learns at the end of the novel that humans can no longer reproduce without the Ooloi, making the Oankali a permanent part of human identity.

The systematic oppression of both the humans and aliens is a re-enactment of history. Throughout these two texts it is shown how, through the structures of racism and xenophobia, a group of people are subjugated. Humans can be both the oppressed and the oppressors. Octavia Butler and Neill Blomkamp use science fiction as a way to critically look at the past, and warn against repeating events in the future.

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# The Zodiac

Andrea Chan

Have you ever wondered how the zodiac or the horoscope came about? There are many cultures that practice their own astrology, but the ones I will be concentrating on are Western and Chinese astrology. Many people confuse astronomy with astrology. While astronomy is the study of celestial objects, astrology is the study of the position of these celestial objects during the time of our birth and their relevance in our lives. Astrology has been around for centuries. The literal meaning of astrology is “the science of the stars.”

The first astrologers were scholars; they studied the movements of the sun, moon, and planets and how these movements correlate with our lives. People who believe in astrology maintain that the position of these astronomical bodies influences our personalities and moods, and can predict the near future of our careers or relationships. In the past, astrology was used to predict seasonal shifts and used to foresee future outcomes. Some people cannot accept astrology because it cannot be proven by science. It leans more towards metaphysics (things that are more than just matter and energy).

Many controversies revolve around astrology; for example, no one is clear how astrology works, astrology is not a science you can validate, and there is no scientific evidence for astrology (Currey, 2014). For people who believe in astrology, it can be a fun and interesting thing to follow. Your horoscope is somewhat like your cosmic fingerprint.

There are two types of zodiac systems or methods in Western astrology. One is called sidereal zodiac and the other is called tropical zodiac. They used to line up, but, over time, due to precession—the rotating of the earth and the shift of its axis—they no longer match up. The similarities between these two zodiac systems are that they’re both divided into 12 equal ecliptic regions and have 12 constellations. The differences are that they were both formed during different times. The sidereal zodiac was formed in 130 BCE while the tropical zodiac was formed hundreds of years after that (<http://lookingatthestars.biz/en/sidereal-astrology.html>).

The 12 constellations come from dividing the sky into 30° sectors. The names of these signs are in Latin. Through research, I found the translations and also what these names mean. It’s mostly due to the fact that they have Greek and Roman history and therefore leading to mythology. The majority of the society doesn’t know how these horoscopes earned their names. For us, knowing our own sign is as far as we’d go. But through thorough research, I slowly found that the information I gained was too interesting not to share. The source I use was Kim Ann Zimmerman at [space.com](http://space.com):

- Aries means the ram: “in Greek mythology, Aries represents the ram whose fleece was sought by Jason and the Argonauts” because it turned into gold (also called the golden fleece)
- Taurus means the bull: “When Zeus fell in love with the Phoenician princess Europa, he transformed himself into a white bull with golden horns to whisk her away to Crete”
- Gemini refers to twins: Castor (mortal) and Pollux (immortal)
- Cancer means the crab: The giant crab Hera sent to Hydra to kill Hercules (but got crushed by his club in the end...)
- Leo means the lion: The lion terrorized citizens because iron, bronze or stone could not harm it; eventually strangled by Hercules...
- Virgo means the maiden: “According to Greek mythology, the earth experienced eternal spring until the god of the underworld abducted the spring maiden Persephone.”
- Libra means the scales: “with the scales representing the balance between the seasons as well as day and night. The ancient Greeks viewed Libra as the claws of Scorpius reaching out”
- Scorpio means the scorpion: Orion threatened to kill all the animals on earth, so Artemis (goddess of hunt and wild animals) sent a scorpion to kill him. After winning, Zeus rewarded it by placing it in heaven at opposite position in the sky from Orion.
- Sagittarius means the archer: Half man half horse sent to watch Scorpio the Scorpion and to shoot him down if he tries to go after Orion again!! (So much drama!) Another belief is that he is sent to shoot Scorpio down while Scorpio out to kill Orion.
- Capricorn means the goat: The popular belief is “Amalthea, the mythical goat that acted as a foster mother to Zeus as an infant”. But since it is half goat half fish, it is also said that he was fleeing from a fight, got his bottom half stuck in the Nile and therefore half of it turned into fish.
- Aquarius means the water-bearer: Beautiful looking young man who Zeus fancied and was brought to Mount Olympus to be a cup bearer for the gods while staying for all eternity...(creepy)
- Pisces means the fish: Aphrodite and Venus “tied themselves to their sons to stay together in the turbulent waters, which is represented by the two fish entwined.” But other tales say that gods were fleeing from Titan Typhoon and changing to animal forms. The two lovers, Ares and Aphrodite transformed into fishes but got caught by fishermen.

Astrology has been recorded back to at least the 2<sup>nd</sup> millennium BC and Babylonian astrology was the first organized system. Through my research, however, I found that it is believed that astrology originated in China around the 3<sup>rd</sup> millennium BC. Chinese astrology is very complicated to understand compared to the rest of the cultures. It relies mainly on the lunar calendar, the

five elements, and yin & yang. Instead of using “signs” like Aries or Taurus, it is based off of a 12 year cycle, using 12 animals called the 12 Earthly Branches: Rat, Ox, Tiger, Rabbit, Dragon, Snake, Horse, Goat, Monkey, Rooster, Dog and Pig. Each year is an animal going in that order. (I find this fascinating. I was born in 1992, the year of the monkey. I’ve been told that my grandfather was also born the year of the monkey. I would sometimes forget his birth year so I would find all the years of the monkey before mine (1980, 1968, 1956, 1944, and 1932) and do deductive reasoning, answer: 1932.)

As in Western astrology, many people believe that the zodiacal animals are unique to each individual and their year. Similar to western civilization, each animal has their weaknesses, best matches, fortune, relationship and luck. According to the legends, there are many different tales of how the Chinese zodiac came about. For example, the orders of the animals are based on a famous Chinese folktale where the Emperor in Heaven, the Jade Emperor, thought that there should be a way to measure days and the easiest way was from a calendar. He announced that the first twelve animals that met with him would have a year of the zodiac named after them. The cat and rat were good friends so the rat promised wake the cat up to wake up super early to go together. Yet when the time came, the rat was too excited and went directly to the meeting place and forgot about the cat. Along the way, he noticed that many of the animals ran faster than he did, so he convinced the ox that he would serenade him if the ox would let him onboard. By the time the animals almost reached the destination, the ox was first in line. But being that the rat was sitting on his head, he jumped ahead of the ox and arrived first to be the first zodiac sign of the years (that cheater!). This is also the theory of why the cat chases the mouse (out of hate and contempt!).

As you can see, astrology goes so far back in time that almost every culture has its own practice. The specifics are different, but the concepts are all the same: looking at how celestial objects and their movements influence our daily lives.

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# 21st Century Learning: An Overview of the Effects of Technology on Student Writing

Cordeelia Clarke

Thanks to modern day technology, almost any question can be answered in less than a few seconds. With this vast amount of knowledge at our very fingertips, the internet has become the primary source for learning in the United States. The integration of technology into classrooms has sparked controversy amongst several people who have differing opinions on its usage. However, despite the controversy surrounding technology in classrooms, it is something that cannot be avoided. So, the question at hand is: how does technology affect student writing?

Many studies have been conducted over the years to prove whether technology is appropriate for use in the classroom. In two articles discussing the use of digital tools in writing, Katrina Schwartz and Kristin Purcell present several facts regarding the topic. While both of them certainly acknowledge the benefits of using digital tools in writing, Purcell discusses several negative impacts of its usage. The conflicting articles contribute to the controversy around this issue; however, they also allow for further discussion.

In Schwartz's article, "How Do Tech Tools Affect the Way Students Write?" the benefits of using digital tools for writing are discussed. Schwartz states "the 2,462 educators surveyed, who were either Advanced Placement teachers or National Writing Project teachers, largely agreed that technology positively impacts students with their writing, personal expression, creativity, and facilitates collaboration." However, in "The Impact of Digital Tools on Student Writing and How Writing is Taught in Schools," Purcell, while she does mention the benefits of technology, focuses on why traditional writing methods should be taught. Purcell argues that "[teachers] worry that students' use of digital tools is having some undesirable effects on their writing, including the 'creep' of informal language and style into formal writing."

Another conflicting point in regard to technology tools in writing is audience. While Schwartz states that "In my experience the extended audience provided by online writing encourages students to be more deliberate and thoughtful," Purcell offers an opposing idea to this thought. According to her article, digital tools enhance students' inability to differentiate between audiences. She states that a challenge instructors face in today's digital environment is "the increasing need to educate students about writing for different audiences using different 'voices' and 'registers.'"

Lastly, an issue involving technology in writing is its ability to increase condensed forms of communication in student writing. The belief that digital tools inspire shortened works is mentioned in both articles. However, unlike the previous points addressed, both authors agree that this is a negative impact of technology in terms of writing. Schwartz states, "And as the digital tools push for truncated communication, teachers report that in some cases students struggle to write longer, more complex pieces." Purcell agrees with this statement in her list of negative impacts of technology by talking about "the general cultural emphasis on truncated forms of expression, which some feel is hindering student's willingness and ability to write longer texts and to think critically about complicated topics." Both authors seem to come to a consensus that the shortened way of writing influenced by digital tools is indeed an undesirable amongst its many positives.

Although the use of technology in writing has been widespread, not all agree with its benefits. Despite the disagreements involving the subject, one can agree that its rising popularity in writing is inevitable.

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# Requirements for Bacterial Growth: Temperature, pH and Atmospheric Oxygen

Olga Krasnobay-Oganezov

## Introduction

Talking about bacterial growth, scientists refer to the increase in the number of cells, not the size of cells. Starting with an isolated cell, growing bacteria accumulate into colonies and populations of billions of cells in a very short time by the process of binary fission.

By understanding the conditions necessary for microbial growth, scientists can determine how to control the growth of microbes that cause disease and food spoilage; on the other hand, this information can be applied with respect to encouraging the growth of "helpful" microbes. The requirements for microbial growth can be divided into two distinct categories: physical and chemical. Physical requirements are: temperature, pH, salt, and osmotic pressure. Chemical requirements are: sources of carbon, hydrogen, nitrogen, oxygen and phosphorus (CHNOPS,) mineral elements (cofactors,) organic growth factors (vitamins as organic cofactors,) and energy.

**The objective of this experiment is to determine how various changes in chemical and physical factors might affect the growth of five different bacteria, and based on the results classify bacteria with respect to temperature, pH and oxygen requirements.**

## Materials and Methods

The materials used in this experiment were: inoculating loops, tube racks, Bunsen burners, paper towels and soap, bleach bottles, waterbath at 55° Celsius, sterile Pasteur pipettes and bulbs, tryptic soy broth (pH 3, 5, 7 and 9,) nutrient agar slant, nutrient agar plate, icebath, 500 ml beakers, heating block, and bacterial cultures including: *E. coli*, *Staphylococcus aureus*, *Clostridium sporogenes*, *S. marcescens*, *B. stearothermophilus*, *Bacillus subtilis* and *Pseudomonas aeruginosa*.

For the temperature experiment, bacterial cultures (*S. marcescens*, *E. coli*, *B. stearothermophilus*, *B. subtilis*, and *S. aureus*) were transferred to nutrient agar slants using streaking technique, flaming the inoculating loop before and after every inoculation. Each inoculated slant was put into the incubator/ refrigerator at specific temperature (4°C, 25°C, 37°C and 60°C) for 3 days.

For the pH experiment, Tryptic soy broth with the assigned pH (pH 3, 5, 7 and 9) was inoculated with the same bacteria as in temperature experiment via liquid-to-liquid transfer (the loop was flamed before and after each inoculation). Inoculated broth tubes were placed into the incubator at 25°C for three days.

For the atmospheric oxygen experiment, each group was given a nutrient agar plate and 3 bacteria cultures: *S. aureus*, *Clostridium sporogenes*, and *Pseudomonas aeruginosa*. The nutrient agar plate is divided into 3 sections and marked whether the environment is oxygenated or not. Every section was inoculated with different bacteria via streaking technique (the loop was flamed before and after each inoculation.) The plates were placed into oxygenated and non-oxygenated environments for 3 days at 25°C. Non-oxygenated environment was achieved by placing the plates with Gaspack in an airtight container. After three days, the results of all three experiments were observed and recorded.

### Results and Discussion

In the temperature experiment, four bacteria (*S. marcescens*, *E. coli*, *B. subtilis*, *Staph. aureus*) exhibited growth at 25°C and 37°C, and none of them grew at 4°C or 60°C. Based on these findings, we can conclude that these bacteria can be classified as moderate-temperature-loving mesophiles. Their enzymes responsible for catalysis of biochemical reactions work best in the 15°C - 45°C temperature range. The enzymes cease their functionality if the temperature of the environment is higher than 45°C. Moreover, high temperature destroys the lipids that make up biological membranes. If the temperature is lower than 15°C, the growth of cells is slowed by the reduction of the rate of chemical reactions and, also, by the reduction of fluidity of the cell membrane. In this case, the rate at which nutrients can cross into the cell is reduced as well. High temperatures can be microbicidal as they tend to cause irreversible and changes in the cell (lethal effect;) low temperatures on the other hand, are more often microbistatic, with growth rates returning to normal as temperature rises. For these bacteria, optimal growth temperature is 37°C, which does not always coincide with the optimal temperature for enzymatic activity. In the case of *S. marcescens*, optimal growth temperature is 37°C, but optimal temperature for enzymatic activity (not for all enzymes) is 25°C, because only at this temperature the orange-red prodigiosin pigment is produced. The name "prodigiosin" is derived from "prodigious" (*i.e.* something marvelous) (1, 2.) Prodigiosin is a secondary metabolite of *Serratia marcescens* (1). Because it is easy to detect, it has been used as a model system to study secondary metabolism (3). Prodigiosin production has long been known to be enhanced by phosphate limitation (2). In low phosphate conditions, pigmented strains have been shown to grow to a higher density than unpigmented strains. The pigment has no defined role in the physiology of producing strains, but has been reported to have antifungal, antibacterial, algicidal, antiprotozoal/antimalarial, immunosuppressive and anticancer activities (3). Although *B. stearothermophilus* showed similar results



as the other four bacteria with respect to positive growth at 25°C and 37°C, and absence of growth at 4°C, it also grew at 60°C (which was too high for the other four.) Based on this data *B. stearothermophilus* can be classified as a heat-loving thermophile with optimal enzymatic activity at 40°C - 80°C temperature range.

In the pH experiment, none of the bacteria could be classified as acidophilic because at pH3 the growth was not observed. However, all four bacteria grew at pH5 and pH7 and only *S. marcescens*, *E. coli*, and *B. stearothermophilus* grew at pH9. Analyzing these results, we can conclude that *B. subtilis*, *Staph. aureus* are neutrophils, growing best at pH7 and not exhibiting any growth in the alkaline (pH9) or acidic (pH3) environments. *S. marcescens*, *E. coli*, and *B. stearothermophilus* all grew in a wide range of pH (pH5, 7, and 9) (4). However, this does not mean that all three bacteria can be classified as basophiles. Bacterial growth is considered normal in different pH due to the nature of the pH curve. Therefore, the determinant factor for classification is the optimal pH. *E. coli* can grow at a pH range of 4.4-10, however, the optimal pH is 6-7; therefore, it can be classified as neutrophil. *B. stearothermophilus* can grow at a pH range of 4-11, however, the optimal pH is 6.2-7.5; therefore, it can be classified as neutrophil. *S. marcescens* can grow at a pH range of 5-9, however, the optimal pH is 9; therefore, it can be classified a basophil.

In the atmospheric oxygen experiment, *Clostridium sporogenes* can be classified as an obligate anaerobe that requires complete absence of oxygen and uses molecules other than oxygen as the final electron acceptor. *Staph. aureus* is a facultative anaerobe because it can grow in presence or absence of oxygen. It is able to use nitrates or sulfates as final electron acceptors, or go through fermentation when oxygen is not present. *Pseudomonas aeruginosa* is an obligate aerobe, which requires the presence of oxygen for growth and uses oxygen as a final electron acceptor.

The growth of bacteria can be controlled in a number of ways including refrigerating, cooking, storing food into airtight containers, and pickling. All three experiments present limitations such as the risk on contamination, and not starting with the same number of cells in each experiment, agar media melting at higher temperatures, evaporation, and freshness of bacterial samples. However, the obtained data is very useful in controlling bacterial growth, providing alternative ways to identify bacteria, and contributing to establishment of bacterial charts for bacterial classification.

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# Tamales and Espresso: East Harlem's Dual Personality

Larry Castellanos

When someone asks me where I'm from, I usually hesitate to answer. What do I say? East Harlem? "El Barrio"? Spanish Harlem? With the dividing line between the Upper East Side and East Harlem blurring constantly, is it safe to call my neighborhood the Upper East Side? I don't think East Harlem's crime rate would allow it. But what about those new stately apartment buildings north of 96th Street that could "pass" as belonging to the Upper East Side? I'm sure they get a say in this as well. My neighborhood has a dual personality, call it "two-faced" if you will. I like to call it ego and alter ego. I live in East Harlem; however, I live in another neighborhood; I just don't know what it's called. I do know, however, that I have lived on this very block for eighteen years and counting — I guess that's one thing that doesn't change.

*I grab my wallet. I grab my keys. I exit my apartment.*

I'm greeted by La Señora Maria, a middle-aged Mexican woman, bottle-collecting from the recycling cans in front of the complex. As she gathers the last of the bottles, she kindly acknowledges me.

*"Buenos dias mijo. Salúdame a tu mamá."*

I smile and tell her I'll pass the message to my mom. I walk steadily as I round the corner. I see young children and their mothers walking to PS. 146; they look like my mom and me, just twelve years ago. I reach the next block. More children, more parents. These are different though. What is it that makes them seem different? Is it the plaid uniform with the patch? The pigment of their skin? It's something. I walk past the Talented and Gifted School for Young Scholars as the children enter one of the top ranking schools in the entire state.

*I cross the street.*

I subconsciously pick up my pace and bury my phone to the deepest corner of my pocket by the end of the next block. The thorough police investigation taking place in the projects to my left is just an extra reason to speed up. News-vans and reporters line up behind yellow tape, anxious to generate another derogatory yet catchy headline about my neighborhood. I politely excuse myself as I disregard a reporter's invitation to be interviewed.

Halfway down the next sidewalk, the cement floor underneath me ends abruptly,

and I'm forced to cross to the other side of the block. I glance up. Another condo building, surely to stick out like a sore thumb. Who wouldn't stand out with a glass facade, a fancy intercom with a camera, or better yet, a doorman?

I ponder breakfast. As I approach Lexington Avenue I realize I must decide between la Tamalera (a tamale street vendor) and East Harlem Cafe. Tamales de salsa verde or "99¢ Pancake Friday"? I see a couple of well-dressed men with messenger bags walk into the Cafe. Maybe I should choose pancakes and an espresso too. After all, it is Friday. The spicy smell of tamales halts me mid-thought. I glance to the right, and see a pair of Mexican women—I think one is Mom's friend—lined up in front of the vendor as she opens her steaming pot. I take too long to decide. I walk past the pancakes and tamales and into Smashiess, the neighborhood deli, where I settle for a toasted bagel.

Before you walk to the train with me, let's take a walk into the past. Let's retrace my neighborhood's historia. Please, I insist! You must be slightly curious as to how my neighborhood has evolved throughout time. C'mon! It's not too long of a walk from here—just follow me... The year is 1880. The sights and sounds amaze you. The busyness of the streets leave you in awe. You hear a rattling from above as the ground beneath you begins to shake. You look up. The New York Elevated Railroad, or "E1" for short, is the pinnacle of innovation. With the recently completed extension on Second Avenue and the extension on Third Avenue soon to come, this mostly German, working-class neighborhood is being served by cheap transportation better than any other location in the city. Alongside the introduction of mass transportation, the great influx of more Western Europeans—primarily Italians in the eastern portion of Harlem—is fueling rapid urbanization (Meyer). In the next forty years alone, 65,000 apartments will be built in East Harlem. By the 1930s, "Harlem" will house the largest Italian population in the entire country, even surpassing the small neighborhood in lower Manhattan known as Little Italy (197-A Plan).

*Why don't you grab a couple cannoli before we walk ahead?*

Fast forward to 1940. It's even busier than 1880. More people, more sounds, but these people look different, and these sounds are different. You begin to tap your foot as a catchy rhythm fills your ears and a friendly ambiance fills the air. But where are the German Yeshivas (Orthodox Jewish educational establishment)? Where are the Italian bakeries? Let's ask the gentleman. "Italianos? Aquí ya no hay muchos mijo." They've left. After World War I, Puerto Ricans began to settle in the neighborhood, primarily around the 110th Street-Lexington Avenue area (Time Line of East Harlem). This small but firm foothold proved to be an empowered enclave, one that engulfed the entire Italian neighborhood. In case the Puerto Rican man's answer wasn't enough to satisfy your question, a trumpet solo fills the air from the music shop across the street as the enticing aroma of arroz y pollo from the restaurante up the block. The newcomers arrived and

changed the neighborhood according to their needs. You're startled yet again by the amount of people on the streets. With a density of 142,000 people per square mile, who wouldn't be startled? (197-A Plan). The demographics of the neighborhood affect more than food and music though. Housing is a main concern among those living in "El Barrio" (the neighborhood). We walk away from the crowds and onto the next street. A much quieter block—filled with friendly faces and, five-floor tenement buildings. Your sight is suddenly captured by vivid colors to your right as you walk past 166 E 104th Street. The mural, located on the facade of the building pops out to you. *The Spirit of East Harlem*, created by artists Hank Prussing and Manny Vega, is a standing testament of the present culture of East Harlem as it captures the essence of the Puerto Rican community through the portraits of local residents and businesses. It's a beautiful sight, but there's still more to see.

*Let's walk ahead.*

You pick up a newspaper rustling under your shoe as it struggles for freedom—disregarding the concerning headline about a murder taking place a block from where you're standing. You look at the year, 1970. You look back up to empty sidewalks. You debate which sight is better, the abandoned sidewalks or the dirty street. You pretend to read the paper as you pick up your pace and walk past a shady figure, steadily glancing at you. What happened to the friendly faces? Where are all the five-floor buildings that were on this block? A complex of fifteen-floor buildings, spanning the entire block has taken their place. After World War II, the high density and worsening conditions of living spaces resulted in the government's attention towards the neighborhood. East Harlem quickly became a target for the New York City Housing Authority (NYCHA). The government-run agency slowly began to replace 181 acres of old— but family filled, low rise, apartment buildings with much taller, modern buildings that "complied with federal housing standards" (Baragona et al.). Over a span of twenty years, NYCHA changed East Harlem, block by block, building a total of twenty-four developments—most of which have deteriorated throughout the years due to increased crime and negligence. These housing projects cut through a neighborhood and community; they transplanted portions of its body with foreign, artificial parts that didn't quite fit in. As expected, the neighborhood did not take well to this change. Many faced the threat of homelessness as their buildings awaited their "transplant." The NYCHA completed its large-scale transplant in 1965 (Baragona et al.).

*Home sick yet? Let's head back.*

A familiar sight greets your eyes as you look back up—*The Spirit of East Harlem*. Its colors and portraits, although slightly faded—still invite you to stare a little longer, just as they did in the 70's. Your gaze of awe is suddenly interrupted by the bickering sound of a construction vehicle backing up around the corner. East

Harlem has been the home for generations of immigrants to New York City for more than a century. Italians, African-Americans and Puerto Ricans have settled here and many still make it their home. Affordable housing has always been central to East Harlem's identity and success. But with great success, comes great change. My daily walk to the train has changed significantly in the past years. The sights are constantly changing; my route is often re-routed by construction work, familiar faces and building facades are replaced with faces and bricks I've never seen before. An entire block of small businesses has been replaced by scaffolding. Change is always around the corner, just as that new condominium is right around the corner from *The Spirit of East Harlem*.

*Let's head to the subway.*

Wait for the 6 train on the 103rd Street platform. Look around at the others who patiently wait alongside. What would they say if one were to ask them where they live. Would the high school kid wearing the latest Air Jordans say "East Harlem" by default? How about the artsy fashionista-looking guy? Perhaps he will say "SpaHa," a cool, syllabic abbreviation of some sort (surely, it gives the name a "SoHo" feel), referring to Spanish Harlem. Or how about the youngster wailing in the baby carriage? What will he call it when he grows old enough to pronounce words? And what about the older Puerto Rican gentleman, who has waited on this very platform for decades? I guess he'll call it what he always has, "El Barrio."

I live in a changing neighborhood; where the remains of "Italian Harlem" are buried underneath me. Where "El Barrio" thrives on one block, and the Upper East Side is born on the next. Where the 23rd Precinct's police activity builds up on one corner, and brand new condos build up on the next. Where the sweet smell of arroz con leche meets the bitter smell of East Harlem Cafe's espressos. Where the crime rate demands the neighborhood be called one name, and rising rent, another. Where childhood memories are buried under a construction site, while the locations of tomorrow's memories await me on unfinished blueprints.

I am the Italian family—once owners of a barbershop on 116th street. I am the Jewish mishpachah of the 1880's—who attended the old synagogue. I am the Puerto Rican familia of the 1940's—who danced salsa in their living room. I am the African-American family of the 1960's—who enjoyed a film at the Apollo. I am the Mexican family who once lived on 108th—who struggled to stay afloat in the sea of monthly bills and waves of rising rent. Just as they were not permanent, I am not infinite. I am solely a temporary resident of a neighborhood during this instant of time, as equally susceptible to change as anyone or anything else. For this reason, as illogical as it may sound—I don't know what to call my neighborhood yet. How can I possibly give it a finite name when it is constantly experiencing a metamorphosis? So for now, I'll just call it home... something I hope will never change.

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# Reflection on Brooklyn Gentrification

Kenneth Pimentel

I don't know how to feel about the changes taking place in Brooklyn. Part of me is proud and excited that others see in Brooklyn what I always saw in it. The fun, the beauty, and the diversity of people in its neighborhoods. I feel jealous because this wave of newbies didn't have to deal with the drugs and the violence, the segregation of neighborhoods, and the stigma of being ridiculed only because you claimed Brooklyn as your borough. I'm angry because they didn't pay their dues, they didn't get their sneakers taken at the bus stop, or have a family get together end with cops and a shoot out. There were no bars for coffee or cocktails. The only bars I knew of were on my windows, with the real heavy bars saved especially for use on the window that led to the fire escape. Yes, the fire escape, it was secured with a lock and chain to keep anything and everything out, no matter what the cost.

I'm sad because some will never know about just hanging on a stoop with your friends and laughing till the sun went down and sometimes till it came back up. Opening the fire hydrant on a hot summer day, and buying home made ice pops from the lady across the street. Impromptu BBQ's. Throwing a party in a vacant apartment. Playing sports on the sidewalk till you graduated to play in the street with the bigger kids. Hopping the turnstiles on our way to Rockaway Beach with nothing but sweat and sand to look forward to. Rivalries with other neighborhoods, from sports to girls to just neighborhood pride.

But I am also excited to see the changes happening right before me. I don't have to tuck in my chain or hide my cell phone on the train while I'm headed to eat Thai food at Sea. I see the new green spaces and watch as kids and adults enjoy them without any fear whatsoever. I'm hopeful that we can find a balance of the new and old, that to rebuild doesn't necessarily mean to destroy, and that future generations won't have to get their Brooklyn edge from a website.