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A Case for Standardized Testing

By John Bellipanni

Dear Editor:

I am writing with regard to Bill Hudson's editorial, "Two Reasons why School Testing is a Failure." Although many of the points made in the article were valid, I believe it overlooks some of the most important advantages of standardized testing. I will be arguing that, while testing has its flaws, it is unlikely that it will lose prevalence in America--and for good reason. While I understand that it is easy to acknowledge the flaws in standardized assessments, it is crucial to note that testing is more politically charged and complicated than your article conveys.

Here's just a brief example of how. As the leading political journalist on Mountain Vista High School's national award winning Eagle Eye publication, I covered Douglas County's school board. Mr. Hudson, as you may know, DCSD's board has received national media attention as a vanguard of the public education reform movement. Infamous among many teachers for its extreme right-wing stance, the board implemented policies such as a new instructor evaluation system, a voucher program for funding private religious schools, and several varieties of charter schools. I was somewhat unsurprised, last March, to see the board take action to waive the newly introduced state-mandated PARCC assessment. After dissecting the issue more thoroughly, I became suspicious that this motion was simply part of a scheme to undermine accountability in the district. Although I had traditionally been an opponent of standardized testing (for many of the same reasons that you explained in your article), this discovery shifted my mindset entirely.

The school board recently had three seats up for re-election. All three incumbents were replaced. Even in the knee-jerk-Republican setting of Douglas County, the public wanted a change. I guess voters care about accountability.

Mr. Hudson, one of the pillars of your argument is the country of Finland and how it performs in relation to the United States. You said, "Much like here in the U.S. 'Accountability' was the fashion" in Finland until the country decided to make schools of teaching more rigorous in the 1980s. Then, "Within a decade, the No-Child-Left-Behind-style mandates from the central government were no longer necessary, because

the teachers knew how to teach." You bring forth an interesting idea because as accountability decreased, educational achievement (test scores) rose. But, Mr. Hudson, this is not the end of the story. You acknowledge that, for some reason, test scores in Finland began a steady decline in the mid-2000s, but you neglect to tie this to accountability (Index Ranking, 2014). Wouldn't it make sense if, over time, an exploitation of accountability, or lack thereof, contributed to the falling performance? Whether they are qualified or not, there is no value for teachers in continuing to provide excellent teaching without adequate reason.

Furthermore, I am concerned that your emphasis on Finnish education is a critique on American education. Even when we ignore Finland's falling position in the international educational rankings, adopting such a system in America could be disastrous. Finland is not like America. Finland's population is less than one-fiftieth the size of the United States' (Statistics Finland, 2014). Finland is socialist (Hancock, 2011). Finland is ethnically homogenous (Statistics Finland). I disagree with the notion that America needs to be taking pointers from a very different country. Education is not like a hat, where one size fits all.

American culture is deeply rooted in competition. You stated that the U.S. has been focused on test scores. This I agree with. However, saying that the emphasis on scores has replaced an emphasis on "training excellent teachers" seems farfetched. After extensive research, I could not find a single teaching school in the United States that is focused on graduating the most teachers or graduating teachers who will warrant high test scores over graduating qualified teachers. I believe it is unrealistic to assume that there is a higher demand in the US for teachers focused on scores than those focused on expertise. You cite that America's "teaching schools graduate more than two times as many teachers as we have jobs for." Why is this not a good thing? I remember you noting in the first part of your editorial, "They say competition makes things better. If that's truly the case, our School Board has had little opportunity to improve over the past couple of decades." Mr. Hudson, competition drives performance. And test scores drive competition.

But it is true that competition is of little value if the United States is competing over only a small portion of the

gigantic entity of education. If standardized tests in the U.S. are measuring only a fraction of the material required to become "educated," they serve no purpose. To this, I'd argue that the solution is not to test less. . . . It's to test more. If America really wants a comprehensive picture of how educated students are, there is no better substitute to the quantitative, measurable records assessments provide. This said, I am not advocating increasing the rates at which students are tested. I am simply illustrating the futility in arguing that "we're measuring too much, too often" yet "measuring only a small part of what really matters," while no other alternative exists. As experts Dawn Camacho and Vickie Cook conclude, "The fact remains that educators must use standardized tests to demonstrate that all students are learning the state standards."

From a student's perspective, I acknowledge how tedious standardized testing can be. Having taken two ACTs, four AP tests, and countless CSAP assessments, I can empathize with students' distain for the evaluations. I understand that it is irritating to wake up early and hurry to your testing site with two wooden pencils and a calculator in hand, then sitting in silence, giving yourself a headache trying to calculate how many oranges Susan will have after Jonathan takes one-seventh of them. And I understand that it can feel insulting to have years of education represented in one number. However, with no decent substitute, I find it better to have standardized tests than no tool at all for interpreting students' responses to academia.

Mr. Hudson, standardized testing is a difficult subject to address for many reasons. However, your analysis that "School Testing Is a Failure" neglects to acknowledge that assessments provide the critical accountability and competition on which the U.S. thrives. Although it is underwhelming that America ranks so poorly in education on an international scale, standardized tests will remain predominant, as they should.

Sincerely,

John Bellipanni

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Eyewitness Testimony

By Leanna Valles

The purpose of my final project is to educate people about the issue regarding the reliability of eyewitness testimony, and I want to present readers with both sides of the issue. More specifically, though, I chose a college-level psychology textbook chapter because I wanted to be able to give readers a lot of detail while still making it easy for them to understand. My audience consists typically of general psychology students but could also include anyone who is interested in reading about the topic of eyewitness testimony.

5. EYEWITNESS TESTIMONY

Learning Objectives

- Understand why learning about the reliability of eyewitness testimony is important
- Understand that the human memory is mostly unreliable
- Explore an exception where memories were found to be reliable
- Understand how research findings have impacted the real world and improved the reliability of eyewitness testimony

5.1 Why is Studying Eyewitness Testimony Important?

The reliability of eyewitness testimony has been the subject of an ongoing debate, and thus many studies have been conducted in this area. Eyewitness testimonies are often used as part of evidence that can ultimately convict someone of a crime. Out of all the wrongful convictions that have been overturned in the United States, eyewitness misidentification was involved in over 70% of them (Innocence Project, 2014). Consequently, it is an important issue to focus on because of the direct impact it has on both the innocent and the guilty. Today, more and more eyewitness testimony and memory research is being put to practical use within the criminal justice system in the form of improving current procedures such as line-ups.

5.2 How Human Memories Can be Unreliable

Most of the psychological research conducted within the area of memory has found that it is malleable--in other words, it can be altered or manipulated, suggesting that eyewitness testimonies are unreliable because they are based on our memories.

For starters, Bartlett (1932) suggested that recalling from memory is a process of reconstruction. This means that, in general, every time we recall something from our memory, it will be slightly different compared with the initial memory or the previous time we recalled it. For example, you may remember squares as rectangles or an abstract-looking shape as something that is more common. Different people's memories will be changed in different ways because these changes are based on our schemas. These are people's frameworks of knowledge through which all information is organized, and they are built from experiences (Bartlett, 1932). Take, for example, the word beach. Someone's schema for beach may consist of sand, sea, sandcastles, ice cream, happy, seashells, and so on. Alternatively, someone who has had a negative experience would have a negative schema. For instance, a war veteran who has experienced war on a beach may have a schema that consists of sand, bombs, fights, injuries, fear, and so on.

It was also has been found that false memories could be implanted within people's minds. Let's explore the experiment carried out by Loftus and Pickrell (1995) that demonstrates this. Prior to the experiment, relatives of the participants were asked to give the researchers three of the participants' childhood memories. The researchers then compiled the memories into individual booklets for each participant. A fake memory of the participants getting lost at a mall was also added to each booklet. They were then asked to write down all they could remember about the events. One-to-two weeks later, the participants were asked to do the same thing with the addition of rating how clear their memory of the events were on a scale of one (not clear at all) to ten (extremely clear). Finally, the participants were asked to repeat the process again roughly one-to-two weeks after the second recall.

The findings of this experiment showed that 49 out of the 72 true events were remembered and that 29% of the participants initially claimed to remember the false event. After the last recall, this percentage dropped to 25% as a result of participants realising that it was a false memory. Also, the number of details and clarity ratings were significantly higher when participants were describing the true memories. The conclusions of this experiment are that we are not always able to tell the difference between real and fake memories,

especially after a long period of time. Therefore, we can't always rely on our memory to be accurate (Loftus and Pickrell, 1995).
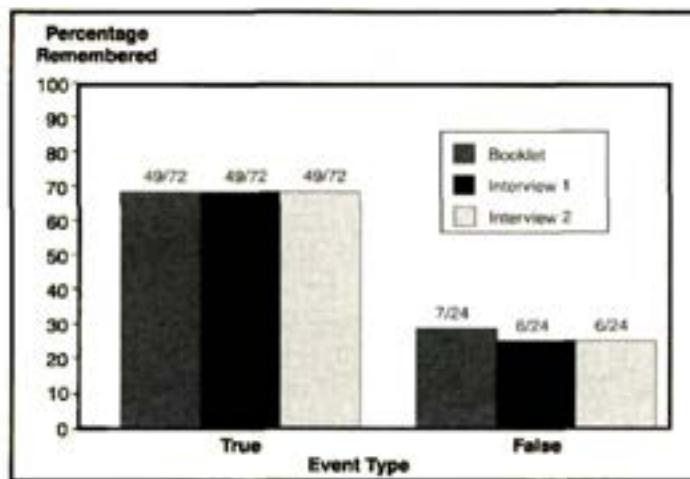

Figure 1: The results of Loftus and Pickrell's study (1995)

Eyewitness testimonies are also said to be unreliable because of a misinformation effect that can occur. Loftus (2005) suggests that **misinformation** can affect people's memory by causing them to remember things that were not there in the first place. An example of this would be if there were incorrect details about an incident spreading around social media and witnesses of the incident encoded it into their memory because it seemed plausible so they thought it was true. This "misinformation effect" takes place when a person's memory is being recalled and/or reconstructed, which means that the individual is likely to believe that his or her account of an event is completely true. This effect is stronger when the time between the event and recall increases or when someone is in an altered state of consciousness (e.g. drunk on alcohol). Also, young children and older adults are more susceptible to remember false information than zxyoung adults and middle-aged people. (Loftus, 2005).

There are several explanations for when and why this "misinformation effect" occurs, including that it only happens to people who have not fully **encoded** the memory of an event. Because there is no fixed memory yet, their memories are easily altered. The second explanation is that an individual remembers all the information but subconsciously decides that the misinformation is the right version, leading the individual to commit the false information to memory. Thirdly, if people have no memory of something, they will just accept the misinformation as the truth because there is nothing else for them to base their memory on (Loftus, 2005).

Figure 2: Elizabeth Loftus, a leading cognitive psychologist who developed a number of theories about human memory.

Kaplan et al. (2015) argue that our memories can become distorted. Examples of how this can happen include specific details regarding the time and place of an event as well as the people involved. They argue it is the result of "emotional memory narrowing," which is when being overwhelmed with emotions can cause people to focus on only the central features of something whilst ignoring the minor details. This means that people will only remember select details and yet believe that they have correctly remembered the full picture. Hence, this could lead to people being confident in their eyewitness testimonies, but it doesn't mean that their testimonies are true.

Key Words

- **Encoded** – where external stimuli are processed into a form that can be stored in our memories.
- **Eyewitness testimony** – the account a person gives of an event that they witnessed.
- **False memories** – memories that you "remember" but have never actually occurred. These can range from
- **Malleable** – changeable, able to be manipulated.
- **Misinformation** – inaccurate information that could affect your memories.
- **Retrieval** – accessing or recalling previously stored information.
- **Schemas** – cognitive frameworks through which all information is organized. These frameworks are individual to everyone because they are shaped by past experiences.

5.3 How human memories can be reliable

Yuille and Cutshall (1986) conducted a **field study** to see whether eyewitness testimonies could be accurate in some cases. They gathered participants (witnesses) of a real-life shooting that occurred in Vancouver four-to-five months prior to the study and interviewed them. As part of this interview, the participants were asked misleading questions such as "Did you see the busted headlight on the perpetrator's automobile?" when, in fact, there was no busted headlight involved in the incident. Additionally, they were asked to give a **free account** of what they saw and to rate how stressed they were during the incident. Yuille and Cutshall also analyzed the data from the police interview that took place not long after the original incident and compared it against the results of their own interview.

The results showed that when asked for a free account, participants recalled more details in the second interview than the first one that was done with the police. Yuille and Cutshall also found that the wording of the question had no effect on the participants' answers, meaning the misleading questions did not mislead the participants. The lowest accuracy of recall was around 76%, which is still significantly high. Therefore, they concluded that there are situations, namely non-artificial settings, where eyewitness testimonies can be reliable. Alternatively, they suggested that the results could be the result of flashbulb memory, which is when certain events are so shocking and unique that you remember a clear snapshot of the event. It is worth noting, however, that the sample size of this study was very small—only 13 people. This makes it hard to generalise these findings to the whole population, which means that it is possible to use other people for the same study and get different results. Nevertheless, the results are still valid because there were no artificial conditions (Yuille and Cutshall, 1986).

Key Words

- **Field study –** a type of research study that is done in the participants' natural environment and has no artificial conditions. This type of study produces results that are higher in validity than lab studies.
- **Free account –** when someone is asked to recall every single detail they can remember about a certain thing or event, no matter how big or small.
- **Valid –** if something is valid, it is accurate or in other words, true to real life.

5.4 Eyewitness Testimony Applied to the Real World

There are certain changes that have been made to the current procedures that involve eyewitness testimonies as well as suggestions that have been made by various psychologists that will hopefully increase the reliability of eyewitness testimonies.

Figure 3: A cartoon example of a line-up

Clark (2012) suggests that when it comes to line-ups, there are two kinds of instructions--biased and unbiased, with the latter being more effective. Biased instructions include telling the witness to pick the perpetrator out while unbiased instructions include letting the witness know that there is a possibility the perpetrator is not in the line-up. Furthermore, he argues that a blind procedure would be even better, which is when the person carrying out the line-up has no knowledge of who the suspect is and therefore cannot give the witness any clues that can influence their decision.

Biased instructions include telling the witness to pick the perpetrator out while unbiased instructions include letting the witness know that there is a possibility the perpetrator is not in the line-up. Furthermore, he argues that a blind procedure would be even better, which is when the person carrying out the line-up has no knowledge of who the suspect is and therefore cannot give the witness any clues that can influence their decision. Lindsay and Well (1985) suggested that a sequential line-up would be the best version of a line-up. This is when all the photos of the innocent people and suspect are shown one by one, instead of all together, and the witnesses are asked if the person in the picture is the suspect every time. A further suggested modification to this procedure is to not let the victim know how many individuals are present in the line-up because, that way, the victim would not be pressured to choose a person just for the sake of choosing.

Another example of a suggestion that has been made is the cognitive interview. It involves mentally taking witnesses back to the crimes, asking them to describe every detail they remember and possibly asking them to recount the series of events backwards. The purpose of this is to try and maximise the number of details an individual remembers about an event. Through experimental research, it was found that this style of interview was more effective because the participants who were interviewed using the cognitive interview recalled more details than those who were interviewed using the standard interview technique (Geiselman et al., 1986).

Some psychologists also have some suggestions for the courtroom. Kaplan et al. (2015) warn judges and jurors that a testimony given with emotion is not any more credible than a testimony that is less emotional. In other words, emotions should be left out of the picture when it comes to making decisions in the courtroom. Sporer et al. (1995) state that the confidence jurors should consider when making their decision is the confidence shown when the eyewitness makes their identification decision, not the confidence that the eyewitness shows in court. This is because by the time the witness gets to court, his or her memory could have been further altered by misinformation and may therefore not be reliable (Sporer et al.,1995).

Practical Application

Bennett Barbour was falsely convicted of rape in 1978. The victim picked out Barbour from 3 different line-ups and presented a convincing testimony at the trial. Barbour was consequently given 10 years in prison and served half of his sentence before being released on parole. Fortunately, he was released in 2012 based on a DNA test that was done with the help of the Innocence Project that proved he was innocent. This is just one of the many cases that involve people being wrongly convicted **based on mainly eyewitness testimonies.**

Figure 4: Bennett Barbour

Key Words

- **Line-ups –** a procedure whereby the suspected perpetrator of a crime is placed amongst similar looking individuals and the victim is asked to select which individual they think was the perpetrator. This procedure could also be presented in the form of photographs.
- **Sequential line-ups –** similar to a line-up but instead of all the individuals being presented together, they are presented one by one.

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How Fear Causes Conflict

By Fiona L. Bartell

Abstract

This research paper explores the cause of conflict in the world at any level, whether that is micro or macro. I believe that all conflict boils down to one thing: fear. There is some external or internal event that takes place that makes us feel afraid and/or threatened. My theory is that there are four different events that create windows for conflict and fighting in our communities. These four events are the following:

1. Someone's acces to his/here wants and desired is threatened

2. Someon'e's access to his/ her percieved basic needs being met is threatened

3. Someone's sense of safety and security is threatened

4. One's ego is threatened or insulted

I will break each of these down in detail, provide examples of each, and offer a local conflict that exemplifies a multitude of these. By understanding that fear is the root cause of conflict, we can better communicate our needs and work through conflict quicker or all together dissolve it.
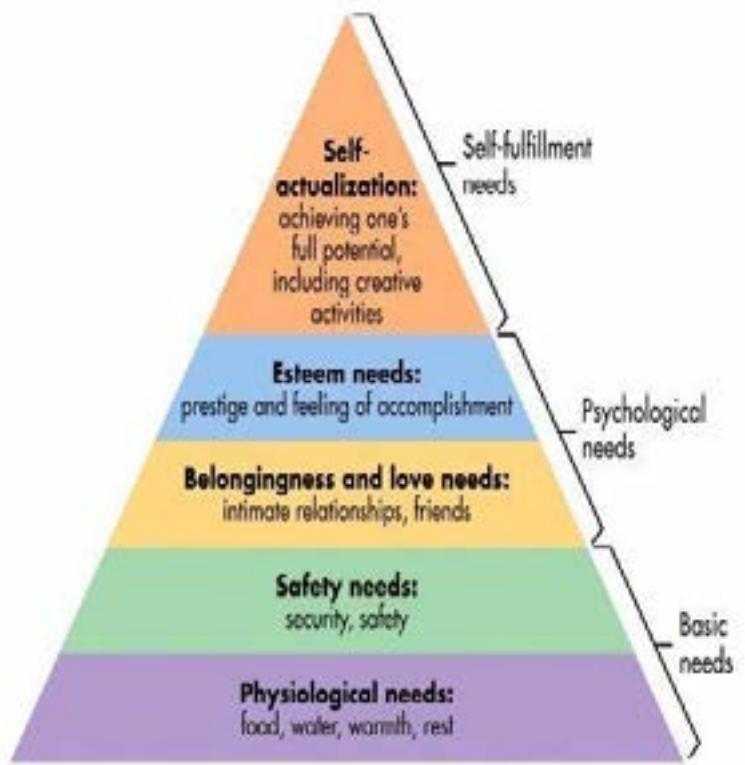
Fear and the Four Events to Cause Conflict

Many people would say that conflict is a result of our differences clashing, and I would disagree. Yes, conflict is surely *about* differences, but differences occur at the second step in the process of conflict. First and foremost, conflict exists because there is an internal or external event that triggers a feeling of fear or threat generated in one's body about his or her survival of self or ego. Maiese states that "What is common to all intractable conflicts is that they involve interests or values that the disputants regard as critical to their survival" (2003). It's this feeling of fear about one's survival that generates differences between people, organizations or institutions. It's a subtle distinction. However, in this subtle distinction lies the key to reducing conflict. Drawing from Maslow's Hierarchy of Needs, my personal experience, my observations, and my studying social justice, restorative justice, and world violence, I come to this conclusion. Conflict exists because we are afraid. Mahatma Gandhi once said, "The enemy is fear. We think it is hate; but it is really fear." Oftentimes, it's my individual and internal fears that are at battle with another person's individual and internal fears.

My theory is that there are four different events where one or more may take place to generate this fear and threat in our bodies. I will break each of these down, one by one. These four events are the following:

1. Someone's acces to his/here wants and desired is threatened

2. Someon'e's access to his/ her percieved basic needs being met is threatened

3. Someone's sense of safety and security is threatened

4. One's ego is threatened or insulted

Before I go into breaking each of these down, I want to address that just because one of these four events occurs, it does not mean that a conflict will always arise. This is due to our perception and our ability to choose how we respond. If any one of these events occur, it opens a window of opportunity for a conflict to arise. As humans with a consciousness, we all have different perceptions of information that come into our awareness. If the situation is perceived as threatening, then fear is generated in the body. At which point, the second component comes into play--we get to choose how we want to respond to this fear. In some scenarios, we can choose to not let the event spur a conflict and instead find a solution and remain calm. In other situations, we might not be able to control our emotional response. This could be because the event is immediately traumatizing or too powerful to intercept our reaction. This idea of choosing our response is very connected to Buddhist philosophy, a meditation practice, and various other spiritual disciplines. I believe this can help with having more choice about how we respond to life--to our emotions, to our feelings, and ultimately, to the people and events around us. Regardless, we will continue to see how the four events may lead to conflict, assuming one does not have the ability or makes the choice to prevent the conflict. In addition, we are not the only variables in the equation. There are other people involved in the equations, typically. Therefore, even if we do decide to not allow it to escalate into a conflict, the other people may. Then, we still have a conflict.

Someone's Access to His/Her Wants and Desires Is Threatened

dEvery person has experienced some sort of conflict because he or she did not get what he or she wanted. We all have different wants and desires in life that are contingent upon the day, the month, our personality, our economic status, our identities, and life circumstances. As humans, we form attachments and expectations in life. If something disrupts one of these, people tend to become flustered or upset. However, deep down, there is a trace of fear that if we don't get what we want, something bad is going to happen. Getting what we want is something most humans have experienced at some point. The degree to which one feels strongly attached to getting what he or she wants varies greatly upon the person.

Access to One's Needs Begins Met is Threatened

Differentiating between wants and needs can be a blurred line. How many times have you heard a friend say that she "needed" a pair of shoes, a jacket, or jeans? If you really think critically about it, that person would still survive and carry on in life without it, unless she didn't have any other shoes, jackets, or jeans. Therefore, this is merely a want--our language can be deceiving. How about hearing a friend say he or she "needs" to go to the football game this weekend?

Life would go on without going. Again, wants and desires are objects, events, experiences we can live without. They are merely something that would add more color to our lives, to our day. They are things that make us feel temporarily more fulfilled. There are many definitions of basic needs. Many look to Maslow's Hierarchy of Needs to understand this concept. Maslow tiered basic needs as the most fundamental, important needs on the bottom of the triangle to the less fundamental, critical needs at the top. The United States defines basics needs as much less: "Access to and delivery of basic needs services is therefore a condition in which the population can obtain water, food, shelter and health services in adequate quantity and quality to ensure survival" (USIP, 2016). However, I want to look a bit more closely at this Maslow's Hierarchy and the United States' definition. To what is the end goal if you just have the first tier of physiological needs? You have a living animal. You are not dead. The next tier brings us an end goal of more enjoyment as a human being and so forth.

My ideology is for all people to have their basic needs met in order to result in healthy, happy, thriving, and fulfilled human beings. I challenge this hierarchy and many other definitions of basic needs. I want to thrive, not just scrape by. Therefore, I define a human's needs as all of the following: water, food, shelter, friendships, a healthy body, money or a resource to trade, clothing, materials, education, and healthcare. There are two ways that people may experience a threat to their basic needs: a belief there is not enough and a blockage to their basic needs.

When one feels there is not enough to go around, people act out. This has been called the scarcity mentality. More examples of the scarcity mentality are the following: you're afraid there won't be any other opportunities that will come into your life, other boyfriends that you'll meet, or more money you can make. Ultimately, you're afraid to let go of what you have because there might not be any more of it. You're afraid that you might not find any more of the thing you want. This scarcity mentality or reality is connected to the first event: one's perceived basic needs is threatened. Oftentimes, we can find scarcity in families, communities, or cities where people do not have equitable or equal access to opportunities.

When people feel that there is something blocking them from their basic needs, there is a baseline fear in the body. This fear then creates a tension in the body, and a conflict is a tension. This tension and fear in the body generates a conflict with another person or situation. "Human needs theorists argue that many intractable conflicts are caused by the lack of provision of fundamental human needs" (Maiese, 2003). At a macro level, Nigeria decides it will no longer sell petroleum to the USA. This sparks a conflict between the US and Nigeria because the US relies heavily on Nigerian oil. At a less macro level, if a mother has had insurance through work that is suddenly revoked, she will feel a baseline fear about how to pro-

vide healthcare to her family. This then opens a door to have a conflict with her employer. Now let's take that same mother and look at a more micro conflict. Let's say the grandpa has been watching the kids on Saturdays while the mother goes to work. She doesn't have money to pay for childcare for that day. One day, the grandpa decides he can no longer watch the grandkids on Saturdays because he wants to start golfing with his friends. The mother may feel fear in her body about providing for her family while also having free childcare. This tension could then lead to agitation and arguments with her father.

One's Sense of Safety and Security Is Threatened

We all want to feel safe and secure while we go about our lives. There are many ways that we can feel endangered, and this produces fear in our bodies and mind. I define safety and security as one's perception that his or her body, family, and source of income are safe and secure. Of course, this is completely subjective and determined on an individual basis. My sense of safe and security can be vastly different from yours. Nonetheless, if your sense of safety and security is compromised, this opens a doorway to conflict. This sense of safety is threatened when families in Aleppo are hearing bombings take place a mile away. This presents a conflict among Syrian citizens, the government, and the rebels. On a more micro level, if a man is walking alone down the street with his four-year-old son and a man with a knife jumps out, we know very well the man's sense of safety and security is threatened.

One's Ego Is Threatened or Insulted

Lastly, there is the threat to the ego. Freud developed the concept of the ego self. The ego is our self awareness, our consciousness, and, for some, our "identity." It's our ability to know what we are doing and why and is the blueprint of our identity in society. Because the ego is what allows us to see ourselves, in return it thrives off of being seen, recognized, understood, and validated. The ego is an abstract concept that theorists such as Freud and Eastern philosophers have been studying, teaching and writing about for centuries. Buddhism talks of the ego extensively. Each person has a unique ego with varying nuances, size, and intensities. I imagine you can recall a time someone said, "Yeah, she has such a big ego." It's this ego that causes conflict and has little tantrums to get what it wants.

The ego is a window for conflict when it's threatened or insulted. Our egos are fragile. If I have a big ego, I am more easily threatened. I am sure you can think of multiple experiences in your life where a conflict was created because someone's ego was insulted. Knowing this, we can become aware when our egos feel insulted, and then mitigate the reactive response that creates conflict. Ultimately, if I work to minimize and have a healthy supervision of my own ego, I reduce my opportunities for conflict.

Power Over to Protect

Due to our fear we feel when our physical self or ego self is in danger or perceived to be in danger, we use the behavior of "power over" to alleviate this fear. In her piece, "Truth or Dare," Starhawk discusses this human behavior of "power over." Power over is defined by the determination to assert one's power over another being to win or dominate the other in order to achieve something. By gaining more power over others, people can achieve their own agendas involving money, resources, and opportunities. This can be seen by parents when their child is not listening to them, and so they spank the child or ground him or her to show a power over. This is done to get children to behave so that they can go about their days in a more peaceful way or in the way they want their days to go. Paradoxically, there is violence and force asserted to get to this "peace." Another example can be found at work. Maybe your company is on the verge of closing a business deal, people are stressed, and your supervisor displays characteristics of power over by ordering people around.

Case Study: Conflict between Boulder Residents about Housing Co-Ops

Within the past few years in Boulder, Colorado, the discussion of legalizing housing co-ops has been a hot topic for some residents. In Boulder, housing co-ops have been illegal, with the recent exception of a few co-ops. Within this last year, housing co-ops have effectively been legalized. However, the road to this decision has been tumultuous and tense. The conflict has not ceased, and now the city is in discussion about specific ordinances about co-ops. Within this localized conflict, I can spot every one of the four triggers of fear that lead to conflict. I can see that people who oppose co-ops are afraid that their quiet, clean neighborhoods that they want or need, depending on how they perceive needs versus wants, could be threatened. Their sense of safety and security can be threatened if they are concerned Boulder is becoming too populated for room for their children to buy a home one day. Lastly, their ego could be threatened if they have been publicly embarrassed at city council meetings. Look within your own community and see if you can spot these four triggers of fear that can explain the conflict.

Conclusion

In conclusion, conflict and fighting aren't going away anytime soon. Conflict and fighting are a natural component of being human and are catalysts for our growth. We can see that it boils down to the threatening of one's self: physical and ego self. However, knowing the root reasons, I believe we can reduce conflict. We can reduce conflict by understanding that fear is the root cause and then communicating this with the other person, group, institution, etc. By being able to communicate and have better understanding of our fear, we can com-

municate our needs and our experience so that we can work more quickly towards a resolution.

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Maiese, M. (2003). Causes of disputes and conflicts. *Beyond Intractability*. Web. 09 Dec. 2016.

Maiese breaks down what intractable conflict is and identifying the underlying causes of conflict. She breaks it down that they result from moral conflicts, issues of justice, rights, unmet human needs, identity issues, and high-stakes distributional issues.

I think she did a great job breaking down some complex concepts so that people can really understand intractable conflict. She didn't make the piece too long or too short. It felt like just the right length to convey her thesis and goal of her article.

I had taken a class called "Intro to Peace and Conflict Studies" that centered all of our readings and lecture on this organization that sponsored this writing: Beyond Intractability. This website has put out so much credible and insightful articles on conflict and peace at the micro and macro level. After reading many articles from this website, I found that it helped me come to my own hypotheses about conflict.

Starhawk. (1987). *Truth or dare: Encounters with Power, authority, and mystery*. Harper & Row.

Starhawk writes about the three different forms of power that exist in the world: power over, power within, and power with. Through the use of an anecdote, she explains these forms of power. Her anecdote is when her and about 600 other women were sent to jail for forming a blockade at the Livermore Weapons Lab. Power over is when a system, organization of person exerts their beliefs and rules over others to abide by. Power within is the power that each individual possesses within oneself. Another way of thinking of this is as empowerment. It also stems from our connection to others. Power with is when one's ideas are listened to by others, not from commanding it, but by influencing. Throughout the article, she weaves the connection between power and magic. She then claims where the roots of power come from. Power over comes from law, rules, and the abstract. Power within comes from our inherent power as individuals and the gifts we bring to the world. She concludes her piece by talking about the systems of power that exist.

This chapter from her book is written with passion, power, and wisdom. I think she makes very sound arguments about the different forms of power, how they show up in our culture, and what we can be aware of to shift the unhealthy

results of certain forms of power.

This piece was potent for me. She speaks from a place of confidence and wisdom that I admire. I see her writing as clear, strong and valid because I can relate to this on a personal level and see her claims exemplified all around me in our US society. I find this piece relevant for my writing because I address the topic of power when I talk about the ego.

"Access to and delivery of basic needs services." *United States Institute of Peace*. N.p., n.d. Web.09 Dec.2016.

Investigating the Phenomenon: White Suburban Teenagers' Love of Rap Music

By Josie Russell

"Straight outta Compton, I'm a brotha that'll smother your mother, and make your sister think I love her. . . . Dangerous motherfucker raises hell, and if I ever get caught, I make bail," I muttered under my breath. I was standing in line at Starbucks with other bleary-eyed college students at our school's student union building on a bleak November morning. My utterances were synchronized with those of Eazy-E, which blared directly into my eardrums. His voice was squeezed through all the wires and mini-speakers that made up my Beats headphones (designed by Dr. Dre). I bought this song; in fact, I own the entire Straight Outta Compton album--it's part of my own music library on iTunes. Yet to what extent is it really my music?

I'm not drawing up another repetitive argument about the issues of copyright and ownership in the age of digital music. Instead, I am concerned with music's unique power to orchestrate empathy. To clarify, music has the ability to transfer the feelings of personal expression from the artist to listeners so that listeners in turn also feel that their own experiences and emotions are expressed through that very same music. I would not have to look far to find someone who has felt relieved, energized, or even brought to tears by simply listening to a tune. We all have a personal relationship with the music we choose to listen to, and for this reason, we must see (or perhaps hear) something of ourselves within the artist's musical arrangements and lyrics.

So, then, why on earth am I listening to Straight Outta Compton by Niggaz With Attitude? What could I, a twenty-year-old white college student, possibly relate to in rap music? I am not "straight outta Compton"; in fact, I come from Boulder, Colorado, a town whose black population sits at a whopping 1.2 percent (The United States Census Bureau 1). I don't think anyone has described me as a "dangerous motherfucker." The only unlawful act I regularly perform and (get away with) is jaywalking: a crime that almost never warrants an arrest, let alone a need to "make bail." Nevertheless, I and the vast majority of my demographic are completely enamored with rap music.

At this point, we must address the fundamental question: What really is rap music? To me, understanding rap's origins and initial functions is integral to truly

appreciating the genre as a whole. Several factors gave rise to this style of musical expression. In the late 70s and early 80s, dark-skinned underprivileged youths in America found their voices continually silenced and their identities repeatedly unacknowledged by both the nation's leaders and the dominant culture at large. Due to socioeconomics and migratory trends, many impoverished urban areas in the United States were home to many disenfranchised members of society. Poor health, drugs, and violence cast a dark, threatening cloud on these cities and their citizens. From a place of misinformation and paranoia, politicians began ratcheting up the drug war and the prison industrial complex, which reinforced inaccurate and unfavorable stereotypes of non-white people. In short, the master structure of U.S. society never provided a space for minorities to exist. Instead, they were thrown into outside of the system and driven into the shadows, reductively labeled as "other." Young black men, in particular, were tired of forcing themselves to operate within a system that never understood them in their entirety. Therefore, they matters into their own hands and produced a platform to use their own voices and express their own life experiences. This platform was hip-hop. Today, hip-hop is considered an aesthetic movement that features rap music, turntable scratching, break dancing, graffiti, and clothing style (Russ 4).

Some multicultural linguistic scholars like Henry Louis Gates argue that rap music has its roots in modes of African rhetoric. In his book, The Signifyin' Monkey, Gates introduces the African interpretive framework of "Signifyin'" (988-89). He traces this concept back to the trickster monkey Esu, a character from Yoruba mythology. (The Yoruba are a longstanding ethnolinguistic group in present-day Nigeria.) One story from Yoruba oral tradition recounts how the clever monkey Esu sidesteps the authority of the lion through a battle of wits. Esu evades the lion by taking lion's words and re-accentuating them, which derives new and subversive meaning from the words. According to African linguistic tradition, subordinated communities, represented here by Esu, can re-empower themselves through the use of language rather than through acts of violence. Certainly, it is not a difficult task to interpret rap music as a form of present-day Signifyin'. Wordplay is the essence of rap music. Rap artists habitually trounce their opponents and reclaim their power

through poetic, boastful declarations. One of my favorite examples of this from Jay-Z's 1996 hit, "Brooklyn's Finest": "I'm from Marcy, I'm varsity, chump, you're JV . . . but fool I'm Jay-Z!" Sampling bits of old music and reframing their meaning is also a popular convention within the genre (think Kanye West's remix of Ray Charles' song "Gold Digger").

To put it bluntly, rap music is inescapably black. It's prevailing features can be traced back to African linguistic practice, and as a genre, its initial intention was to speak into existence the live experiences of people whose voices were silenced in rhetoric of the dominant culture. Paradoxically, most of rap music's audience is undeniably white. A survey conducted by Newsweek in 1991 claimed whites constitute 60 to 80 percent of rap's audience, though these numbers are disputable because the methods Newsweek employed to measure and categorize the fan base remain unknown (Kitwana 83). I would assume that rap's white following has grown exponentially since 1991, rising alongside the genre's overall popularity. A testament to this hypothesis is hip-hop's recent integration into white-dominant mainstream culture as well as its astounding breakthrough into high culture. Professional theatre is often regarded as the epitome of high culture, rampant with esteemed, upper-class elitism. Bearing this in mind, rap music took over the Broadway stage via the musical Hamilton last year. Who would have thought that rap music, the child of urban poverty and class struggle, would find itself at the Tony Awards?

To simply say that white mainstream audience enjoys rap music would be a massive understatement. Privileged suburban youths are drawn like flies to the hip-hop aesthetic: The very brand of cultural expression generated by our society's "outsiders." This collective behavior seems miraculous, but it is certainly not unprecedented.

Although hip-hop's popularity among white suburban teens is a current phenomenon, white mainstream culture's love (and appropriation) of black music is actually a longstanding trend in American history. Janise Marie Blackshear, in her graduate thesis on the topic, states that the process of understanding why whites listen to hip-hop music is part of a larger quest to uncover why whites have been infatuated with black cultural forms for the past century (6). Jazz, rock n' roll, and hip-hop are all forms of music grounded in a strong cultural and racial identity—an identity whose experiences were often marginalized from mainstream forms of musical expression. These genres emerged to voice the experience of being black in America throughout different points in cultural history and were later adopted, exploited, and/or transformed by mainstream culture.

The rise of hip-hop shows distinct parallels to the rise of jazz music, as both styles of musical expression developed out of the cultural tension in urban areas inhabited largely by marginalized groups. Fro instance, during the turn of the 20th century, Louisiana's population featured a substantial portion of freed African-American slaves as well as local white and Native American populations. New Orleans was also a budding epicenter for Creole culture, an amalgam of French, Spanish, Native American, and/or African heritage. In this city of racial and ethnic mixtures, people struggled to construct and maintain distinct identities and social classes, and, out of this status anxiety, jazz developed. According to accomplished musician and sociology professor Dr. Ortiz Walton, "jazz helped to create a sense of common cultural identity and uplift of morale in Afro-American communities where conditions had been made ripe in intra-group conflict" (50). Just as with hip-hop music, jazz was a direct response to the socio-cultural situations that affected its primarily black population. No one described the genre better than the jazz legend, Duke Ellington: "The music of my race is something more than an American idiom. It is the result of our transplantation to American soil and it was our reaction in plantation days, to the life we lived. What we could not say openly we expressed in music" (49). Incidentally, Ellington refused to call his style of music "jazz" and instead preferred to label it as "Negro" or "African" music; mostly, he insisted that it was simply "beyond categorization" (Tucker 6). Veritably, the explosion of black culture and expression in the early 1900s, known as the Harlem Renaissance, was nothing short of extraordinary. The phosphorescent gaslights of Manhattan's Harlem neighborhood and the intoxicating, sultry atmosphere of the late night jazz clubs proved to be irresistible to the masses. Regardless of differences in economic status or skin color, countless citizens wanted to escape into the rich, exhilarating, playful world of jazz. Unfortunately, as jazz expanded out of nightclubs and into recording studios across the country, radio stations were more comfortable playing jazz tunes produced by white musicians, causing black musicians to fall out of the limelight in mainstream culture.

A half a century later, the influence of black musicians was again erased from cultural memory when rock n' roll broke through popular culture and took the nation by storm. Rock n' roll was originally performed in black nightclubs in Harlem, Chicago, and Memphis during the dawn of the civil rights movement. White teenagers then traveled from across the country out of fascination for what they called "race music" (Fischer 53). With their eyes wide, they watched black musicians shatter cultural norms and move their bodies unrestrainedly to the unconventional syncopated rhythm. In an act of retaliation to conservative mainstream society, the young people of America literally screamed for the perceived wildness of this upcoming genre. To capitalize on the popularity that the genre had with white audiences, racist record companies and white conservatives whitewashed the rock n' roll industry by allegedly paying money to radio stations to broadcast records produced by white rock n' roll musicians (Blackshear 17). Soon enough, musicians such as Elvis Presley were covering rock n' roll hits like "Hound Dog," which was originally performed by Big Mama Thornton, a black woman (Russell 177). In an interview in 1972, alone, the late, great John Lennon spoke to the magnitude of the black influence on rock n' roll by stating that "the only white person I ever listened to was Presley . . . and he was doing black music" (Chappell 56). Today, rock n' roll is considered to be a white-dominated genre, and like hip-hop, it has a predominately white fan base.

Clearly, the popularity of rap music in mainstream culture comes as no surprise once we take into account the history between black music and white audiences. Quincy Jones, a renowned African-American producer and 28-time Grammy Award winner, summarizes this long-term relationship quite well: "Black artists were making music for blacks, but whites were digging it too. That's the way it's always been" (182). However, musical history generates just as many questions about hip-hop as it does answers: Why exactly are white suburban youths attracted to this black form of expression? How does hip-hop's purpose of being an outlet of expression for marginalized people remain intact if it is consumed largely by white mainstream society?

There are many theories about why rap music appeals to such an unlikely audience, and no one theory provides an authoritative explanation. A common argument is that rap is the new poetry, and, therefore, its fan base will eventually extend to that of poetry's (which, according to literary history, is nearly universal). Viewing rap as a form of literature, as this line of reasoning prompts us to do, certainly has its merits. Rap functions as a breeding ground for linguistic creativity. Like poets, rappers play with the representational quality of language and the structure of language itself. They do this while generating vivid imagery, inviting the reader to interpret the world in a multiplicity of new ways. Like all great movements in literature, rap breaks the rules. It simultaneously reinstates, challenges, and subverts the ways that we use and understand language. Take, for example, the excerpt below from LL Cool J's song "Rampage", released in 1990:

> The Ripper, the master, the overlordian
> Playing MCs like a old accordion
> I get the inspiration from unnecessary station
> Them sayin' I was vacationin'
> You can't quote with your weaker throat
> Tryin to sneak a peek at how I freak the notes.

Here, the rapper maintains a sense of stylistic unity, all the while playing with concepts of grammar, rhyme, and metaphor. I do think that rap's emphasis on wordplay is partly responsible for its popularity among people whose life experiences are otherwise not reflected in hip-hop. I know that I, as an English major, was first drawn to the genre because of its poetic nature. However, I believe that this quality alone cannot explain my ever-growing consumption of rap music. I also know that not every fan of hip-hop is as much of a poetry-lover as I am, so there must be other reasons behind the tremendous, irresistible pull of hip-hop music and culture on a whole generation of white youth.

Some music scholars claim that young, upper/middle class white people are so intrigued by rap music because it provides a window into another American reality that is profoundly different from their own—a reality that they desperately need to see. Bakari Kitwana, a famous journalist, activist, and political analyst, believes that hip-hop can be used as a tool to bridge the racial divide between blacks and Whites in America, as expressed in his book, Why White Kids Love Hip-Hop, published in 2002. But does hip-hop really provide a sufficient portrayal of black culture in America, especially considering mass media's growing exploitation and commercialization of the genre?

The answer to that question is a resounding "no." Rap music, and music in general, can only offer a limited representation of another culture. To some white audiences, rap is nothing more than ghetto porn. Teacher and writer Adam Ragusea described his experience with hip-hop as a white teen as a "kind of armchair ghetto tourism—a way of experiencing the thrill of 'otherness' without actually having to be anywhere other than my comfortable home and deal with anyone other than my comfortable family and friends who were all basically like me" (1). Thus, the white audience's internalization of the reductive, exaggerated images of black people that are present in rap music may actually do more to hurt race relations in America than help them.

I consulted my friend and aspiring rapper, Steve D'Epagnier, about his relationship with rap music and its impact on his understanding of race. Steve grew up in Colorado, and he was the 2014 winner of eTown Radio's High School Songwriting Competition. He is also white. Commented Steve,

> I like to think that I got into rap because I was inspired by the way people could address and work through their struggles... how they could artfully deliver a statement through music. I wanted to do the same thing, so a lot of what I rap about are the hardships that affect me and conflicts I see in the world today. I hope that, in that sense, I stay

true to the genre", Steve said. I then asked if the music he listened to had any detectable influence on his worldview. His answer was calculated, yet enthusiastic. He said, "I think the presence of rap music in my life has made me a worldlier person. By listening to this music, my eyes were opened to the mass incarceration of black people, and I began to investigate the issue more, for instance. Rap music encouraged my open-mindedness and towards people that are different from me.

I think that Steve's introspective monologue raised valuable points about what entices white people to listen to (and participate in) rap music. His answers also touches on the implications that the white consumption of rap music has on American culture. As Steve mentioned, rap does create an opportunity for connection between people who are separated by geography, class, and race. However, problems arise when white people consistently receive only one stereotypical presentation of marginalized culture. By all means, the mission of this essay certainly isn't to guilt white audiences out of enjoying black culture; in fact, I highly encourage that everyone adds at least a few rap albums to their iTunes library. To keep stepping in the right direction, though, white fans should make sure that listening to Drake isn't the only way they're interacting with people that are different from them. Developing a more nuanced understanding of disempowered peoples is one of the many ways we as a society can work to end racism. Rap music can provide white audiences with an enticing narrative of the black life experience, but it alone cannot tell us the full, complex story of every individual. Hence, I encourage all people to become a rap fans, regardless of skin color, as long as they do so responsibly.

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Denial of Equal Access: Why the FDA Should Approve Cochlear Implants for Unilateral Hearing Loss

By Nathaniel Curtis

In the United States, hearing loss is the third most common physical condition, surpassed only by arthritis and heart disease (AAA). Susceptibility to hearing loss starts before we are even born: 50-60% of prenatal hearing loss is genetically caused (CDC). Between these genetic factors and environmental causes, over 4,000 babies are born in the U.S. with significant hearing loss every year (CDC). The incidence of hearing loss only broadens as babies develop into childhood. It is estimated that 14.9% of children are afflicted with hearing loss (Niskar et al). In total, about 3 million children in the U.S have hearing loss, nearly half of whom (1.3 million) are under the age of 3 (CHC).

There are two primary kinds of hearing loss: conductive hearing loss (hearing loss caused by issues in the outer and middle ear); and the more common *sensorineural hearing loss* (SNHL), hearing loss caused by issues in the inner ear (Johns Hopkins Medicine). While hearing aids successfully treat conductive hearing loss, they provide benefit to patients with only sufficient residual hearing. Patients seeking treatment for severe SNHL won't benefit from hearing aids but can instead receive cochlear implants, which are medical devices that enable hearing by bypassing the defective inner ears completely to provide direct electrical stimulus to the auditory nerve (ASHA).

The FDA approved the use of cochlear implants for children with bilateral SNHL (inner ear damage of both sides) in 1990. This treatment has been a great success in the United States, and as of 2010, about 70,000 people (most of whom are children) have received implants (ASHA). In spite of their bilateral hearing loss, cochlear implants have allowed these children to enjoy the benefits of true hearing with both ears and experience the world similarly to people with normal hearing.

Surely, if children have SHNL in only one ear (unilateral hearing loss), they are already a step closer to normal hearing with both ears. After all, they were born with one ear that already functions well. This might seem like it would be the case, but, unfortunately, the 18.1 million Americans with unilateral hearing loss are not currently granted the same pathway to true hearing in both ears (Lin et al). The current criteria for FDA approval apply strictly to bilateral hearing loss, which excludes cochlear implant use for patients with unilateral hearing loss (DHHS).

For many Americans with hearing loss, the FDA plays an essential role in their treatment. In their own words, the FDA is responsible for "protecting the public health by . . . ensuring that . . . medical devices intended for human use are safe and effective" and "advancing the public health by helping to speed product innovations" (FDA). It is important that the hearing devices used by our citizens are safe and meet the needs they are meant to address, and ensuring this is a core responsibility of the administration. Approval of a medical device also has financial implications. The FDA's position as arbiter of insurance funding for hearing procedures gives it a unique power in the quest to protect and advance public health. However, because insurance providers like Medicare cover only hearing devices that are FDA approved, patients with unilateral hearing loss who want cochlear implants have to fund the procedure out-of-pocket.

For unilateral SNHL patients, the FDA has certainly given patients options that provide assistance with hearing. The administration would be quick to point out that Bone Anchored Hearing Aid (BAHA) and the Contralateral Routing of Signal (CROS) systems have been approved for unilateral hearing loss since 2002 and 2005, respectively (UMMS; TransEar). These devices were designed specifically with unilateral hearing loss in mind. But herein lies the problem: BAHA and CROS devices take advantage of different anatomical mechanisms than cochlear implants. BAHA and CROS each route sounds from the "deaf side" to the "hearing side" rather than restoring the lost hearing in the impacted ear in the way of cochlear implants. Because of this difference, the BAHA and CROS systems are able to deliver sounds from both sides of the head to the intact ear, but they do not allow true hearing in both ears for unilateral SNHL patients.

With regard to hearing loss, two important concerns must be addressed by the FDA before the expressed goals of the administration are met: first, whether or not the devices currently approved by the FDA adequately serve the hearing needs of patients with unilateral SNHL; and, second, whether or not the FDA's policy maintains an equitable standard of care between bilateral and unilateral SNHL patients. The reality is clear: even with these currently approved devices, unilateral SNHL patients are missing out on the daily advantages of true hearing in both ears and miss the opportunity for healthy neurodevelopment.

The options available are preferable to implementing no treatment at all, but children with unilateral hearing loss remain ten times more likely to fail a grade than their normal-hearing peers (CDC). Research even suggests that children with hearing loss are more likely to be injured than children with normal hearing (Mann). By approving cochlear implants for patients with bilateral SNHL but not unilateral SNHL, the FDA has denied unilateral SNHL patients an equal standard of care for hearing-related neurodevelopment and unfairly denied patient access to the spatial awareness needed to live a life free of preventable harm.

What Exactly is Sensorineural Hearing Loss?

Sensorineural hearing loss occurs from damage to the inner ear, which houses the sensory organs for hearing for each ear. In normal hearing, sound vibrates the eardrum, which transmits sound energy through the middle ear to the cochlea, which is a fluid-filled bony structure that contains nerve receptors used for hearing. When we perceive sounds, movement of the cochlea's fluid excites the hair cells at various locations in the cochlea. Signals from the hair cells translate the movement into signals that are sent to the brain through the auditory nerve. However, when a person has SNHL, the movement of the eardrum is still transmitted to the cochlea, but the hair cells inside are damaged (ASHA). This results in a partial or complete loss of hearing.

Approved Devices for Unilateral SNHL: CROS & BAHA

What is the CROS system?

Contralateral-routing-of-signal systems were specifically designed for people with unilateral hearing loss. A microphone placed on the "deaf side" routes sound to the "hearing side" ear. While earlier systems relied on a physical connection between the left and right components, modern devices can achieve this wirelessly. Rather than restoring hearing on the "deaf side," these systems simply give users the sounds of both sides in their "hearing side" ear. Instead of having "stereo" hearing, all noises are heard out of the functioning ear. Because they are classified as hearing aids, insurance companies will not cover the cost (roughly $6,000) for patients (ASHA).

What is the BAHA System?

Bone-anchored hearing aids are medical devices used to convert sounds in the patient's environment into vibrations in the skull, which are then transmitted to the inner ear. This mode of hearing is called "bone conduction." For patients with unilateral SNHL, bone-conduction hearing is achieved by sending vibrations from the "deaf side" through the head to the inner ear on the "hearing side." Unlike people with normal

hearing, BAHA users hear sounds from both sides of their head in their "hearing side" only. As with CROS, the "deaf side" hearing is not restored. Surgery is required to implant these devices, like with cochlear implants, but most insurance providers cover this cost (roughly $8,000) for children seeking treatment (NIDCD).

How is a Cochlear Implant Different?

A cochlear implant provides hearing to users by directly stimulating the auditory nerve. For people with SNHL, a cochlear implant replaces the hearing function of the damaged cochlea altogether and sends electrical signals to the auditory nerve (ASHA). Cochlear implants have two parts: the external component and the internal component (see Figure 1). The external portion consists of a microphone (to pick up sound), a processor (to perform a computerized analysis of sound), and a transmitter (to send the signal to the implanted receiver). This section is secured by a magnetic connection and can easily be removed at the will of the patient. The internal portion consists of a receiver (surgically placed under the skin behind the ear) and the electrodes (surgically inserted into the cochlea to stimulate the auditory nerve). These two components work together to restore hearing for the patient.

Although the cost of implantation often exceeds $40,000, including post-operative rehabilitation, over 90% of all commercial health plans have covered cochlear implants for bilateral hearing loss since 2004 (ASHA). Additionally, research from Johns Hopkins University found that cochlear implant use creates a net savings of $53,000 per child compared with the estimated $1 million cost of a child with profound hearing loss over a lifetime (ASHA).
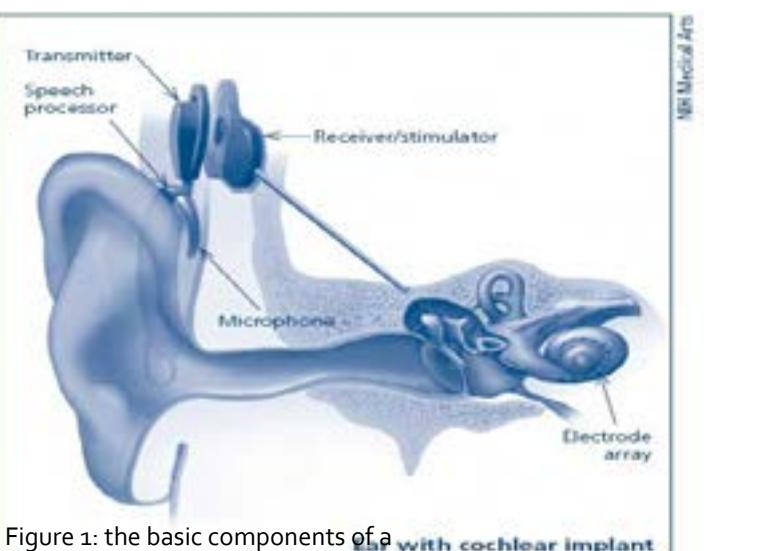

Figure 1: the basic components of a cochlear implant (NIDCD)

The FDA's Neglect of Binaural Hearing

By not approving cochlear implants for unilateral SNHL patients, the FDA is impeding patient access to binaural hearing, an ability central to daily operation in society, and already enjoyed by bilateral SNHL patients and people without hearing complications. Binaural hearing refers to the abilities granted to a person who receives sound information from both ears and creates meaningful information from its analysis. This type of hearing is not just the passive intake of various sounds; rather, it is the integration of sound from both sides working in concert with the brain to help paint an aural picture of a person's surroundings. Binaural hearing can be categorized by two key use-cases that have direct utility in conversation, movement, professional environments, and virtually all listening conditions: the head-shadow effect and sound localization. While most people may not consider the clear utility of these advantages, their absence immediately poses problems for any person interacting with the world through sound.

Binaural Use of Head Shadow

People with normal hearing and bilateral-SNHL patients have access to a component of binaural hearing called head shadow that unilateral SNHL patients are currently excluded from. Head shadow refers to the "silhouette" that a person's head casts over the ear as a sound approaches the head. This shadow blocks and therefore attenuates sound volume by shielding the ear. A person with binaural hearing can selectively listen with one ear instead of the other by leveraging this "shadow." The resulting intensity difference allows us to choose which signal source we prefer: the one with more distractions or the one with fewer. Imagine walking down the side of the road with cars on your left and a friend talking to you on your right. The head shadow effect allows you to preferentially hear your friend's words over the noisy street to increase your comprehension of speech. With binaural hearing, your brain is able to prioritize speech or other important sound in the presence of other distractions.

The very head shadow that empowers users of binaural hearing is the cause of a disadvantage experienced by those without it. In order to be heard, sound from the affected side has to pass through the head (high frequency sound) or bend around it (low frequency sounds) to be heard. See figure 2.

If you have grown up with healthy hearing, the ability to attenuate the perception of distracting sounds is something taken for granted. For patients with unilateral SNHL, speech presented to the weaker side is noticeably quieter in the healthy ear, making conversations harder to maintain. Imagine every sound in your listening environment presented at the same priority. This would devastate your ability to understand what people around you are saying, creating substantial impediments to everyday social interaction. The head-shadow effect is an obstruction of everyday living without binaural hearing be-

cause it blocks important sounds from being heard. It isn't hard to see how dealing with extraneous distractions for an extended amount of time would be unnerving.
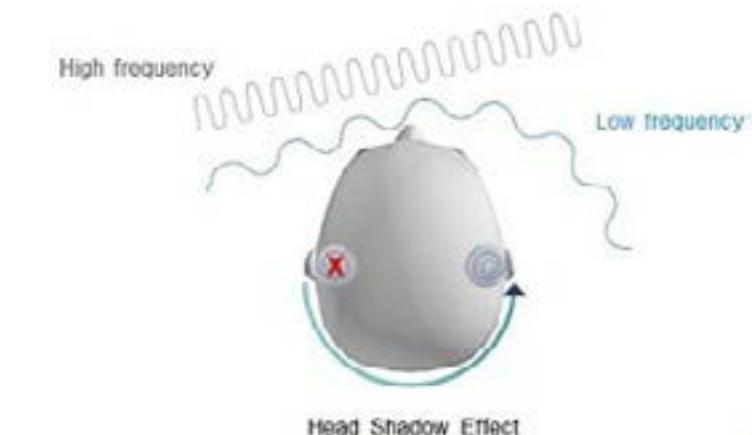

Figure 2: The Negative impact of head shadow in unilateral hearing loss.

(Cochlear America)

Denying these patients the head shadow benefit does not qualify as "protecting the public health," nor does promoting devices that fail to address these deficits qualify as "advancing the public health." Patients with bilateral SNHL are able to address this issue with their proper binaural hearing, so the denial of this ability for unilateral SNHL patients is unnecessary given current technology and inadequate in light of the FDA's goals for the public.

For as long as the FDA keeps the cochlear implant from being used on patients with unilateral SNHL, this key aspect of binaural hearing is being denied to patients. Yet, the FDA doesn't acknowledge head shadow in its consideration of patients with unilateral SNHL. It seems not to recognize the importance of the ability to listen selectively. By failing to recognize this, the FDA is inflicting among the most irritating elements of unilateral hearing loss on those who seek treatment to correct it. This creates real harm on a daily basis for patients with unilateral SNHL that is simply not an issue for patients with cochlear implants.

Sound Localization

Bilateral SNHL patients also have access to a hearing modality called sound localization that unilateral SNHL patients are currently excluded from. The ability to instantly localize the source of a sound is a skill people with binaural hearing enjoy on a daily basis. Crucially, hearing in both ears is required. With both ears, we are able to pinpoint the origin of a sound by com-

paring the timing and loudness differences between our two ears. For instance, if a person claps on your left side, the sound will both arrive at your left ear faster and arrive at a higher intensity than to the right ear. In a matter of milliseconds, your brain is able to compare these differences and make meaningful observations about the environment. According to a 2005 study by Verschuur et al, patients who gain binaural hearing double their precision in sound localization. In clinical studies, binaural hearing showed a reduction from 67 degrees to 24 degrees of mean angular error, eliminating more than half of participant localization mistakes (Verschuur).

Without hearing in both ears, however, details like the movement and location of a sound source are harder to grasp. Skills like predicting the trajectory of an object based on sound localization are used every day for crossing the street, navigating the immediate surroundings, and avoiding dangerous objects. With normal hearing, if you were walking down the same busy road from before, you would able to anticipate every car or bicycle that passes you from behind by using sound localization. However, without this skill, the seemingly mundane activity acquires elements of anxiety we often don't think about. Imagine the stress of knowing a truck is approaching, hearing the intensity of its engine increase as it approaches, but having limited skills to predict its path. Patients with unilateral SNHL, even those with BAHA or CROS devices, are not able to localize sound in this way. Conversely, patients with bilateral SNHL have access to cochlear implants, which allow them the same reassurance enjoyed by people with normal hearing.

By failing to consider sound localization in the treatment of unilateral SNHL patients, the FDA neglects the risks imposed to patients with unilateral SNHL. This is a real problem experienced by patients. A 2007 study by Joshua Mann et al. for the *Annals of Family Medicine* concluded that children with hearing loss may be at an increased risk for injury, finding that they were more than twice as likely to become injured than the control group (Mann). Don't children with unilateral SNHL deserve the same access to safety as their bilaterally impacted peers?

Negatively Impacted Brain Development

There are clearly inconveniences and risks to receiving sound from only one ear, but there are long-term impacts to cognitive development as well. Three studies by Judith Lieu et al at Washington University help to illustrate the tolls that unilateral hearing loss takes on a child's development. Her 2010 study found a deficiency in overall oral language skills for children with unilateral hearing loss compared to their siblings (Lieu). Her longitudinal study published in 2012 reported "persistent behavioral problems and academic weaknesses or areas

of concern in about 25% [of children with unilateral hearing loss]" (Lieu). Finally, her 2013 study found worse language and cognitive skills in children with unilateral hearing loss and worse central auditory development than in their siblings (Lieu). BAHA and CROS systems can provide benefits that help address disparity in information access between children with unilateral hearing loss and their normal hearing peers, but only cochlear implants can address the neural disparity that exists between children with unilateral SNHL and children with hearing in both ears.

Critical Period of Auditory Development

Cochlear implants uniquely access the auditory cortex during childhood brain development in ways that BAHA and CROS systems intrinsically cannot. This means that only cochlear implants can stimulate both the right and left auditory cortices in the developing brains of children. By promulgating these less capable treatment options, the FDA is imposing irreversible changes to the brains of those with unilateral SNHL.

There is a sensitive period of development in the central auditory system that occurs over the course of about 3.5 years until the age of 7 (Sharma et al). The brain is optimally plastic (cognitively moldable) during this period. It is during these formative years that the brain hones its ability to process incoming sound signals into meaningful input. For people with normal hearing, this flexibility of the brain allows various regions of the brain to be devoted to the different senses. Because their brains receive appropriate input delivered to the coordinating area of the brain, each sense gets an appropriate amount of "space" in the developing brain. However, in the absence of auditory input in one ear, a sensory void is created. The brain's reorganization to fill this sensory vacuum can create permanent changes that determine the availability of auditory processes in a child's future.

As supported by prior research and exemplified in a 2016 case study, the developing brain of a patient with unilateral hearing loss is prone to reorganization of this unused area, repurposing it for visual and somatosensory (tactile) processing (Sharma et al). This shift is known as cross-modal reorganization. The developing brain is most disposed to these changes in allocation during the critical period, which heavily informs the layout of the brain moving into adulthood. Fortunately, the school-age subject of this case study was able to receive a cochlear implant for her right-ear unilateral hearing loss, a rarity in the U.S. This opportunity lead to both the reversal of auditory activation compensatory to unilateral hearing loss and evidence of improved sensory reorganization for visual and somatosensory stimuli.

For auditory activation, decreased compensatory reorganization resulted among other benefits (improved speech perception, and increased sound localization, age-appropriate auditory responses). In a person with normal hearing, stimulus to the right ear correlates to the activation of the auditory cortex on the opposite side of the body (the contralateral temporal lobe). When a person has unilateral hearing loss, this part of the brain experiences what is called unilateral auditory deprivation in which the expected nervous input is absent. To compensate for this deprivation, the auditory cortex for the other ear processes sound in its place. Figure 3 shows the drastic shift from pre-implantation activation indicating normal-hearing-ear dominance to the restoration of more typical activation patterns.

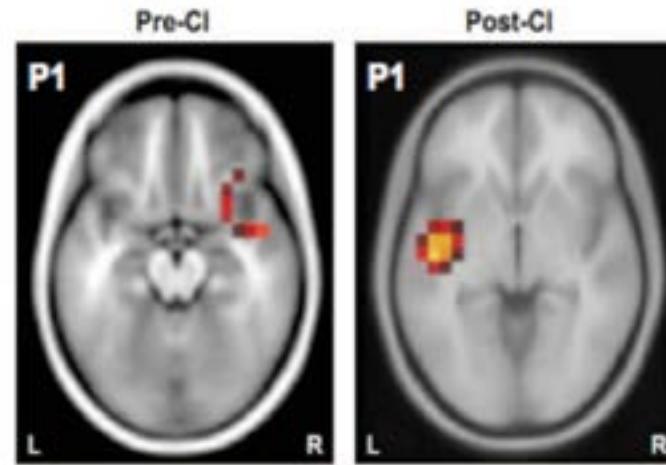
Cortical Auditory Evoked Potential: SSD (Right) Ear Stimulati

Pre-CI · P1 · Post-CI · P1 · L · R · L · R

Figure 3:

Left Panel:

Before the cochlear implant, right ear stimulus did not activate the corresponding auditory cortex in the left hemisphere

Right Panel:

After 27 months with the implant, right ear stimulus shows a response in the left auditory cortex, typical of people with normal hearing.

(Sharma et al)

By restoring true hearing to both ears, the visual and somatosensory activation also returned to normal areas of processing in the brain. As can be seen in Figure 3, her brain's cross-modal reorganization was significantly curtailed,

transforming her brain's activation pattern into a layout more closely resembling a child with normal hearing. There was also evidence of the regression of visual and somatosensory processing to typical activation patterns. This is detailed in figure 4.

Cortical Visual Evoked Potential
Pre-CI · P2 · Post-CI · P2

Cortical Somatosensory Evoked Potential
Pre-CI · P50 · Post-CI · P50

Figure 4: Regression of Reorganization (Sharma et al)

Visual Stimulus:

When shown a visual stimulus before the cochlear implant, the subject demonstrated activation in the temporal lobe, an area normally designated for auditory processing (upper left).

At 27 months after implantation, the same stimulus indicates brain activation typical of visual stimulation in the occipital lobe for visual processing (upper right). Some residual temporal lobe activation persevered.

Somatosensory Stimulus:

Pre-implantation, when given tactile stimulus on the right index finger, the subject demonstrated activation in the temporal lobe (lower left). At 27 months after implantation the cross-modal recruitment was reversed, restoring typical sensory assignment (lower right).

This rare glimpse at the potential of cochlear implants for patients with unilateral SNHL illuminates the frustrating reality facing most children without true hearing in both ears. Just as cochlear implants access the auditory cortices of patients with bilateral SNHL, cochlear implants are uniquely

capable of access to the auditory cortex. This restoration is simply not a feasible result from the use of currently approved devices like the CROS and BAHA systems because they encourage reliance on only one auditory cortex.

Because cochlear implants are the only treatment option that develops these pathways for both ears, they provide valuable permanent contributions to users that others will never be able to. Whereas CROS and BAHA systems relinquish the parts of the brain normally devoted to hearing, cochlear implants access and defend these areas, providing children with more typical neural development. By leaving this inequality between bilateral and unilateral SNHL patients unaddressed, the FDA is contributing to a generation incompatible with future intervention options for their hearing.

The FDA and Nonmaleficence

Ethically, it would seem mandated that the FDA address the inequality it has created between unilateral and bilateral SNHL patients. As a federal agency aspiring to protect the public health, the daily risk and long-term neuro-developmental harm imposed by the current inequity of care seems inexcusable. Informed by instincts alone, this unnecessary harm feels negligent and unreasonable. It seems self-evident that an inconsistency like this is inappropriate.

Not only does the inequality between unilateral and bilateral SNHL call for concern based on moral heuristics, it opposes the basic guides of medical ethics. According to *Principles of Biomedical Ethics*, a publication devoted to resolving ethical quandaries in the field of medicine, a set of principles can be applied to maximize the ethical treatment of patients. Among these is the principle of *nonmaleficence*: the idea that we should not "[impose] a careless or unreasonable risk of harm upon another…through acts of commission or omission" (Beauchamp). This concept certainly applies to the FDA's treatment of unilateral SNHL patients currently subjected to risks from inadequate treatment options.

No realistic interpretation of the FDA's approval history could indicate intentional harm (an act of commission) done to unilateral SNHL patients; the CROS and BAHA approvals both evidence the FDA's intent of promoting the public's health. However, these devices do nothing to provide binaural hearing or prevent unhealthy neurodevelopment for the patients they intend to serve. Cochlear implants do provide these benefits, yet are not approved. The denial of equal access to hearing technology in this way would suggest an undervaluing of binaural hearing and an ignorance of brain development by the FDA. No intentional harm has been exacted, but the FDA has failed to uphold the principle of nonmaleficence by persistent acts of omission.

How the FDA Can Fulfill Its Ethical Duty

A comparison of the options available to the growing number of patients with unilateral SNHL reveals the disparity between unilateral and bilateral options is astounding. Further dumbfounding is the sheer absence of obstacles in the way of equality. By scientific measures, cochlear implants are unmatched in addressing the needs of patients with unilateral SNHL through binaural hearing. Still, inferior options are the standard treatment. By ethical measures, cochlear implants are a clear avenue to considerable improvements in the lives of every child who is born with or develops a unilateral SNHL. Still, they are not approved. Even by the FDA's own safety standards, cochlear implants are shown to be a safe and effective option for bilateral SNHL patients (FDA). Approval simply needs to be extended to unilateral patients as well.

As a government administration, the FDA is currently in the position to directly benefit thousands of patients by granting cochlear implants approval for treating unilateral SNHL. The FDA needs to consider their role in the lives of the impacted patients. Surely, the public's health is not served by denying equal access to care based on arbitrary partitions of treatment. The insufficient neurodevelopmental health of America's children with unilateral SNHL should similarly be cause for concern. It seems that based on the current FDA approval policy, a person deaf in both ears has access to more complete hearing than a person only deaf in one. In accordance with their own goals of advancing and protecting the public's health, the FDA should approve cochlear implants for treatment of unilateral hearing loss to end this inequality between unilateral and bilateral SNHL treatment practices. This will mark not only the end of unreasonable harm imposed by the administration, but also the beginning of increased safety and developmental health for America's growing population of children with unilateral SNHL.

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Best Friends Found in Unlikely Places

By Emma Levy

Many people have a story of how they "found themselves" at some point in their lives. This type of narrative is common, repetitive, and, well, somewhat annoying. On the other hand, each person tells his or her own story uniquely, for no writing style is the same. I know my experience sounds cliché, but working with those who have cognitive disabilities completely changed the way I view the world. But my story brings a new perspective to the benefits of volunteering. My work as a special-education ("special-ed") aid taught me the importance of equal treatment for those who have special needs and encouraged me to pursue my passion for social justice in the professional world. My first two years of high school were tough, and though it was by no means an easy or comfortable task, working with the special-needs students in my high school gave me the most memorable experience of my life because I was taught valuable lessons by some of the most incredible people I have ever met.

Stepping through the doors the first day of my freshman year, I couldn't wait to get involved, make perfect grades, and enjoy everything that the teenage years have to offer. But by the second semester of my sophomore year, my mental health had almost completely deteriorated. It became incredibly difficult to balance school, extra-curricular activities, and the pressure of social status. Without realizing it, I had let the things I was thrilled to experience drive me to engage in some pretty unhealthy behaviors. Sure, from the outside, it seemed I was thriving: I had a great group of friends, was captain of my ski team, and was doing well academically. In reality, I was so anxious with how I was perceived by my peers that I could barely function. The materialistic mindset I had created for myself was becoming detrimental to both my mental and physical health.

As my third year of high school came around, I was in desperate need of something fulfilling—not another club, not another A on a math test, not another invite to a party, but something I could find true worth in. I had never been the type of person to visit the school's guidance counselor, but I was having trouble finding an activity that satisfied my quest for a meaningful activity. When my counselor suggested I drop a core class and work in our school's special-ed room, I was shocked. Even though I had some experience with those who have cognitive disabilities, I was intimidated and reluctant to drop a class that would "buff up" my high-school transcript. After weighing the pros and cons of dropping an important

class, I chose to put my mental health before my academic success and devoted one hour a day to working in the special-ed room. While the experience that followed was by no means easy, I am thankful for that period in my life because I would not have discovered my passion for education, the rewards of working with those who have special needs, and the importance of loving everyone for who they are regardless of their social status.

The way I felt the first time I stepped foot in Room 314 is something I will never forget. My stomach was in knots, and I could feel sweat seeping into my shirt. I wouldn't be given a syllabus or guide for this class; it was a challenge I had never faced before. As I walked into the room with my best "it's-okay-i'm-not-freaking-out" face, I was greeted by a younger boy in a wheelchair. He smiled at me, extended his hand, and spoke a mile a minute: "Hi. I'm Andre. Are you the new student helper? Nice to meet you. It's fun here." I was flustered, so I mumbled something generic and quickly looked for someone in charge, but I couldn't seem to find a designated authority figure. This became what I loved the most about the special-ed room: the typical high-school hierarchy did not exist. Sure, the teachers and aids were in charge of the students, but it never felt like that. Everyone was spread around the room during the day, doing his or her own thing with whatever help was needed. Some students worked on writing and reading while others played educational games on Ipads provided by the school.

During my brief tour of the room and introductions with each student, one very special person caught my eye: a freshman, named Luka, whom I had seen before when he came over to play with my brother Quinn years ago. When I was in elementary school, I had seen Luka passing the soccer ball with his brother on their way home from school. It was pretty apparent that Luka had some sort of cognitive disability, but my younger brother always said how funny and friendly he was. During my tour when we were introduced, Luka wasn't interested in my presence whatsoever. I couldn't take it personally. He was simply focused on the upcoming lunch hour when, without fail, he would indulge in some sort of pasta dish.

After getting oriented with the classroom during my first hour of volunteering, I was actually excited to come back the following day. Throughout the semester, I was often paired

with Luka for activities because we really were inseparable. I began hanging out with Luka outside of school on Sunday afternoons; we would head into the city and explore museums, see movies, and, as always, eat pasta or french fries. We even launched a craft fair and candle business in our high school's bookstore to fund our weekend expeditions. These frequent dates with my buddy became almost therapeutic because Luka expected nothing from me. He was just there for a fun time with me, his good friend. I could be goofy when I felt like it and quiet when I wasn't feeling my best because Luka didn't care and always made me smile regardless of how I was feeling before we hung out.

Not only did Luka teach me the importance of friendship, he also influenced my decision to work professionally for social justice and equality. I really don't think I would have chosen my major if I hadn't spent so much time with my friends who have special needs. I believe people with cognitive disabilities are often overlooked in society. Many "normal" students in my high school wouldn't dare go into the "Retard Room" because difference intimidates them. Some of the most interesting, loyal, and kind people I've ever met work or study in Room 314. Since that semester volunteering with Luka and my other friends, I have become passionate about de-stigmatizing cognitive disabilities. These experiences have inspired me to pursue a career in social justice through journalism. I would not such a desire to create change without the recommendation of my guidance counselor and the support of everyone affiliated with the special-ed room.

My first two years of high school were very difficult, and though working with the special needs students in my high school was not always the easiest job, it was by far the most memorable and rewarding experience of my life because I was taught valuable lessons by some of the most incredible people I have ever met. From the first day I stepped foot in Room 314 to my teary-eyed goodbye with Luka right before I headed off to college, I learned so much about hard work, true friendship, and the importance of giving everyone a chance. My special-ed friends weren't considered "popular" by the majority of students, but that doesn't matter. If students are not happy and healthy individuals, your place on a high school's social hierarchy is insignificant. I think it's so interesting that in Room 314 I "found myself" through my relationship Luka. Understanding what real, uninhibited friendship looks like has been the most valuable skill I have just begun to grasp. Without my friend Luka, I definitely wouldn't be in the place I am today. I would not have the empathy, compassion, and drive for equality without my experiences working with my buddies with special needs. So, to Luka and the rest of the Room 314 gang, thank you.

Fig. 1. Luka celebrating after the Wisconsin "Best Buddies" walk. (Spring 2015)

Fig. 2. Luka, his beloved pasta, and I during one lunch period. (Winter 2015

Fig. 3. Luka making fun of my backup pair of sunglasses. He prefers Aviators for a 1950s, footloose aesthetic. (Spring 2014)

The Not-so-Invisible Glass Ceiling

By Kaycee Maas

Abstract

Donald Trump's gender was a crucial factor in his ability to win the 2016 presidential election, and without equal representation of men and women in politics, feminine issues will continue to take the back seat to masculine issues. This is due almost entirely to androcentrism and hegemonic masculinity, which creates a double bind for women such as Hillary Clinton, disadvantaging them as they attempt to be successful in masculine domains. My analysis reveals that the media are perpetuating the gender binary, and the opinions of voters in a survey I created corroborates these findings.

Introduction

When I began researching this paper, I was torn between the success of the small victories made for the advancement of women and the androcentric world of politics that forced women to fight for a voice in government in the first place. The 2016 presidential election has been not just a political battle but also a battle of social justice. Hillary Clinton was not simply a champion for the Democratic party but also for women and girls everywhere in the United States. In 2008, Clinton received 18 million votes toward winning the Democratic nomination or, as Clinton put it, "18 million cracks in the highest glass ceiling" (as cited in Fortini, 2008). In 2016, the glass ceiling that keeps qualified, hard-working women from achieving top positions in male-dominated fields such as politics still endures despite its many cracks, thanks to the gender binary. In this paper, I support my claim that gender was instrumental in Donald Trump's election as president, and that equal representation of men and women in politics is essential for the promotion of feminine interests. I begin with an explanation of how hegemonic masculinity and androcentrism benefited Trump and created a double bind for Clinton, which significantly inhibited her ability to win the election. I then discuss the relationships between gender, politics, and the media with help from a paper by Dr. Lindsey Meeks, whose research specializes in political communication, gender, and the media. Finally, I will discuss how data from a survey I created and distributed give insight into the gendered nature of voter's opinions regarding Clinton, Trump, and their policies.

Gender and Society Donald Trump as the Hegemonic Man

Hegemonic masculinity is an important concept in understanding the gender relations in the United States.

Hegemonic masculinity is our way of conceptualizing the phenomenon whereby both men and women attempt emulate the hegemonic man (Ferree, 2015). The hegemonic man is an unattainable and idyllic image of masculinity that incorporates all the traits that society values in a person (Ferree, 2015). The hegemonic man has a CEO's income, the physique and athletic ability of soccer player David Beckham, the power of a politician, the virility of Hugh Hefner, the manual skills of a construction worker, the charm of Ryan Gosling, and a strong family behind him the whole time (Ferree, 2015). Trump, though he does not have either the body or the athletic ability of Beckham, has been uncommonly successful in his ability to incorporate a high number of these traits into his character. This is particularly advantageous when competing for a position that has exclusively been held by very masculine men SUCH AS Theodore Roosevelt and Ronald Reagan. In the words of Georgia Duerst-Lahti, "The US presidency seems to be reserved for manly men, doing manly things, in manly ways" (as cited in Meeks, 2013).

Ron Swanson, a character from NBC's Parks and Recreation, is like Trump in his ability to very successfully embody the hegemonic man. Ron inadvertently sums up the essence of hegemonic masculinity in the episode "Go Big or Go Home," when he presents the Swanson Pyramid of Greatness and explains that it is "the perfect recipe for maximum personal achievement" (Poehler, 2011).

Androcentrism, the Double Bind, and the Feminine Apologetic

Androcentrism explains the phenomenon in which we grant higher status, respect, value, reward, and power, to the masculine compared with the feminine (Ferree, 2015). This is the sociological driver that created hegemonic masculinity, and the reason that there is no such thing as hegemonic femininity. Both men and women attempt to emulate the hegemonic man. This puts women in as scenario referred to as the double bind, or "a situation in which cultural expectations are contradictory" (Ferree, 2015). Many of the traits of hegemonic masculinity that lead to one's success also mean failing to be feminine, and therefore failing as a woman. To avoid this, women must balance their masculine interests, traits, and activities, with feminine ones (Ferree, 2015).

This balancing of masculine and feminine interests, traits, and activities is called the feminine apologetic. Caster Semenya for example, is an Olympic athlete whose masculine appearance prompted the International Association of Athletics in 2009 to investigate her biological sex. Semenya is featured on the cover of the September 2009 edition of You magazine in which she is positioned to show off her manicured nails, with salon styled hair, make-up, and feminine attire and accessories. Next to the larger cover photo is a smaller image of Semenya showing off her muscles post-race at the Olympics, with the caption that they turned Semenya from a "power girl" into a "glamour girl" along with the Semeya quotaion, "loves it" (Ferree, 2015). Her cover for You magazine is a way of satisfying society's need that she balance her athleticism with a display of femininity and to avoid harsh gender accusations and policing. Caster Semenya and Clinton can relate in their shared struggle of attempting to participate in masculine spheres of society and subsequently being criticized for not being able express their gender in a way that society deems appropriate.

Gender Performances

In this section, I will discuss the three main gender strategies a woman may choose to adopt: emphatic sameness; emphasized femininity; and gender equivocation (Ferree, 2015). Emphatic sameness incorporates mostly masculine traits. Women employing this strategy attempt to just be "one of the guys." This is the gender strategy adopted by Clinton, and accordingly, she was criticized by the media for being too masculine.

Sarah Palin, another female politician, adopted the strategy of emphasized femininity, an exaggerated form of femininity aimed towards satisfying the desires and interests of men (Ferree, 2015). Palin was not criticized for being too masculine as Clinton was, but she was frequently sexualized and rarely taken seriously. A pundit from CNBC claimed that Palin's political success was attributed entirely to the fact that men want to mate with her (Ferree, 2015).

Campaign managers are more likely to encourage emphatic sameness due to the androcentric nature of media coverage and the fact that masculine gender expressions are more likely to be taken seriously. One study found, however, that Palin and Clinton and Palin received equal amounts of masculine and feminine trait coverage from the media, despite their very different gender strategies.

Gender equivocation is a combination of emphatic sameness and emphasized femininity. Achieving the perfect balance, however, is essentially impossible due to the double bind. The media and our news sources have become increasingly relentless when it comes to critiquing the ability of men and women to do gender.

The Gendered News Coverage of Politics

Some people referred to 2008 as the "Year of The Woman" (Fortini, 2012) due to the fact that Clinton and Palin had climbed higher in the political field than any other women in the history of the United States. The possibility of a woman as a major party nominee for the presidential and vice presidential candidate was exactly the kind of statistical and social deviance that news media could profit from (Meeks, 2013). Dr. Lindsey Meeks claims that consistent displays of women as deviants in news media frames women as a poor fit for political office. It also results in voters not receiving the information they need to make an educated decision on who to vote for and subsequently, there can be severe implications that result from gender gaps in news coverage. Meeks (2013) examines the New York Times' gendered coverage of the 2008 presidential campaigns of Clinton, Palin, and Barack Obama, the man they were both running against. Highlights of her findings were illuminative of the androcentric nature of not only politics but the media as well. To assess the gender gaps in news coverage by the New York Times, Meeks observes the prevalence of gender in candidate novelty, issue emphases, and character traits.

Candidate novelty was measured by what Meeks calls "novelty labels" which were separated into two categories for analysis: gender labels and uniqueness labels. Gender labels would be used when referring to a candidate as a wife/mother, husband/father, and other similar labels. Uniqueness labels would be used when referring to a candidate as a pioneer to be the first female Democratic nominee or the first African-American president. For men and women, their historical roles as provider-protector, and caregiver, respectively, translate into how we categorize masculine and feminine issues and traits today.

Gendered Political Issues

Masculine issues in politics include military and defense, crime, the economy, and foreign policy. On the other hand, feminine issues include health care, education, women's rights, the environment, and social welfare (Meeks, 2013). Interestingly, in a 2008 survey by the Pew Research Center, 54% or respondents believed that a man in public office would be better at managing national security and defense, while only 7% believed that a woman would be better. They study also found that 52% of the respondents believed that a woman would be better at handling social issues, while only 7% responded that they believed a man would be better (Meeks, 2013).

A highlight of Meeks' research is that the New York Times emphasized masculine issue coverage two-and-a-half to five times more than feminine issue coverage. This means voters are much more likely to be unaware of the stances that Trump and Clinton take on important policies regarding feminine issues such as whether or not a candidate supports school vouchers, which are government-funded scholarships for students to attend private or public schools, or if a candidate believes we should prioritize green energy. Additionally, as candidates run for higher, more executive offices, news coverage

becomes increasingly more masculine (Meeks, 2012) —meaning that news coverage of presidential campaigns has especially low rates of feminine issues content.

Deviance

One problem with calling more attention to the norm-breaking identities of women in politics is that it casts women as a poor fit for office because people tend to mistrust things that are deviant from our preconceived notions, and a female president is incongruent with what people tend to think a president should be. Trump, on the other hand, has been able to use his deviance to his advantage.

Americans are becoming increasingly distrustful of the government. Trump, who has never been a politician, still fits the mold of the masculine men people have come to associate with presidency, and he became the preferred candidate for millions of voters.

Voters' Opinions

I conducted a survey that was taken by 26 participants prior to the 2016 presidential election. Each participant was asked to use one word to describe Clinton, Trump, and the policies of each, for a total of four words. In my survey, 23.08% of the participants identified as male, and 76.92 identified as female. None identified as other. Respondents of the survey were primarily young adults, with 88.46% of participants between the ages of 18 and 29, 7.69% between the ages of 50 and 59, and 3.85% between the ages of 60 and 69. Everybody who took this survey was planning on voting in the 2016 presidential election. The survey also found that 84.62% were planning on voting for Clinton, 11.54% were planning on voting for Trump, and 3.85% were planning on voting for someone else. I then conducted two other surveys both containing a list of words taken from the responses to the first survey. Each survey had 10 participants. In the first survey, I asked the participants to identify a given word as either masculine, feminine, or neither. For the second survey, the participant was given a word and asked to select a bubble that most closely aligns with how the participant associates the given words (extremely positive, moderately positive, slightly positive, neither positive nor negative, slightly negative, moderately negative, or extremely negative).

Survey Methods

I combined the results from the three surveys so that I had a collection of words used to define both candidates and their policies, and I then recorded the number of respondents who believed the word was masculine, feminine, or neither and extremely positive, moderately positive, slightly positive, neither positive nor negative, slightly negative, moderately negative, or extremely negative. If a word had 60% or more

of respondents saying that a word was masculine or feminine, I considered that word to be masculine or feminine for my results and analysis. I then added up the number of responses for each category of extremely positive, moderately positive, slightly positive, neither positive nor negative, slightly negative, moderately negative, or extremely negative and divided them by the total number of responses for that candidate or their policies to create statistics to express the overall opinions by the voters who took my survey.

Survey Results

Clinton was described using words that were connoted as masculine 22.7% of the time and with feminine words 4.5% of the time. Her policies were described using masculine words 4.2% of the time and feminine words 12.5% of the time. Trump was described using masculine words 33.3% of the time and feminine words 8.3% of the time. His policies were described using masculine words 13% of the time and never with feminine words.

Clinton was described with positive words (extremely positive, moderately positive, and slightly positive) 45% of the time and negative words (extremely negative, moderately negative, and slightly negative) 40.45% of the time. She was described with neither positive nor negative words 14.55% of the time. Her policies were described with positive words 67.92% of the time, with negative words 13.33% of the time, and with neither positive nor negative words 18.75% of the time. Trump was described with positive words 4.17% of the time, with negative words 85% of the time, and with neither positive nor negative words 10.84% of the time. His polices were described with positive words 13.04% of the time, with negative words 66.09% of the time, and with neither positive nor negative words 20.87% of the time.

One particularly interesting result is regarding how respondents classified "American" in the categories of masculine, feminine and neither. 70% of respondents said that they connoted the word American as masculine. The other 30% of respondents said that it was neither masculine nor feminine, but 0% of respondents connoted American as feminine.

Analysis

One finding from my survey was that gender labels were used more frequently when describing Trump and Clinton than when describing their policies. Both candidates were more frequently described with masculine words. It is also noteworthy that Clinton's policies were described using feminine words 3 times more than masculine words and Trump's policies were never described using feminine words.

Despite the fact that 84.62% of the respondents intended to vote for Clinton, only 45% of the words used to

describe her were considered to be positive. The disparity between the percentage of positive words used to describe her and the percent of positive words used to describe her policies (33.74 percent higher for her policies) is indicative of the glass ceiling phenomenon. That despite the fact that voters show strong support for her policies, they still have reservations about Clinton herself, perhaps because she is a women. An article from New York magazine describes Clinton as " highly competent, serious, diligent, prepared (sometimes overly so)—a woman who cloaked her femininity in hawkishness and pantsuits" (Fortini, 2012). Amanda Fortini, the author of this article, criticized Clinton of being "too prepared." Evidence like this, and that of my survey, present examples of the fact that we are living in a society that sets a double standard for women and makes it impossible for anybody to meet the expectations set by society.

Breaking the Glass Ceiling: Escaping the Binary

The United States is a patriarchal society. This fact has become exceedingly transparent in the wake of the 2016 presidential election. Voters too are heavily influenced by the country's androcentric society, and their opinions of candidates reflect this whether they support the patriarchy or not. This election was, in many ways, a symbol for the dichotomous gender misconception people have so carefully cultivated, and its results are immensely illuminative of the fact that the country has yet to break through the glass ceiling that keeps so many women from succeeding in masculine spheres of society.

Despite the fact that androcentrism deems feminine issues as "less important" than masculine issues, they really are just as important as masculine issues. Evidence has shown that having female politicians changes what is being voted on, whether they agree on the specific policies or not (Ferree, 2015). If presidency in the United States really is "manly men, doing manly things, in manly ways" (Meeks, 2013), then how else will feminine issues receive sufficient attention if there aren't any women in government to advocate for them?

Additionally, it is important to remember that it is not just feminine issues that are receiving the short-end of the stick. Rather, it is everything that society considers to be feminine. Androcentrism goes far beyond media and politics, but media and politics have the unique ability to spread information and ideas much more rapidly than individuals can. If more women hold political offices, and news media reduces the gender gap in their coverage, the country just might break through the glass ceiling, allowing men and women to express their gender not on the basis of a binary but freely, as it should be.

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All Athiests Go to Hell

By Ellie Marcotte

There was a *t* on the wall.

It was a lowercase faded driftwood *t* nailed to the wall of my classroom, right in front, so no matter where you sat you always saw it.

The elegant, water-wrought lowercase *t*.

I knew what it meant. But I was always one of those people that savored the reactions of my classmates when I deliberately stated, "What does the *t* stand for?" Their reactions were always instantaneous--they never skipped a beat. There were baffled looks, fiery glares, and offended splutters of "T-that's not a '*t*' Ellie, that's a crucifix!"

I'd look confused for a second, nod slowly, and walk off, as if four years of strictly Catholic education had not taught me what, exactly, the profound symbolic meaning of our Lord and Savior's holy cross was. It was my main source of entertainment.

Drawing my attention away from the cross on the wall, I listened to what the teacher was saying. I hadn't known Ms. Cole for long, but from what I gathered she was a genuinely nice woman. And she was, at present, lecturing my freshman theological studies class about the fundamental idea of theology. More specifically: Catholicism.

The topic struck a chord. I narrowed my eyes, eying the big letters on the whiteboard: "CATHOLICISM--THE TRUTH." I wanted to scoff. As if that one word was the end-all answer to life on this planet. As if it could answer questions humankind has never figured out. As if it were our salvation.

My question was about half-thought out before I felt it leave my mouth.

"Do atheists go to hell?"

Ms. Cole paused her lecture to look at me. "Come again?"

"Do atheists really go to hell?" I asked again, adding a forceful element to my tone. I thought for a moment before rewording my question. "If you're an atheist and a good person, would you still get into heaven, even if you don't believe in God?"

Ms. Cole adjusted her crude cat-eye glasses in thought, brushing her stringy, curly brown hair out of her eyes. Her lower lip puffed out--she looked baffled, almost offended at the prospect of the question. After a moment of silence, she laughed. "Of course not. If you don't have faith in God, you don't go to heaven. Why would you go somewhere you don't believe?"

The atmosphere of the class seemed to err on the side of agreement with the teacher. I felt them staring at me--their glares like daggers slashing into my spine, I felt the heat of embarrassment rush through me and it suddenly felt hard to breathe.

To this day, four years later, that statement sticks with me. If you don't believe in God, why would you go to heaven? And of course that brings about the question, if you don't believe in hell, what then? Where do you go? Why would you go somewhere you don't believe? It was as if no matter who you were, what you've done, or how you've lived, as long as you could put on your résumé that you believed in this one rendition of a higher power, you were given authorization to access the finest vacation spot the universe had to offer: heaven.

It was as if this conformity to a hierarchal social construct was the secret to a life of prosperity and a solid after-life. It was as if living by a thousands-year-old and heavily misinterpreted rulebook was the key to the living the complete human experience. And if you didn't follow the rules, if you questioned "THE TRUTH", if you didn't find some kind of deeper symbolic meaning behind the pale, washed-out *t* on the wall, you didn't go to heaven. You went somewhere else--and where that was remains unanswered.

There was something about that idea, that close-minded exclusiveness and narrow vision of what the "human experience" really was that continually leaves me baffled, after years of developing and growing in my own unique spirituality. It reached a point where every day when my mother turned on the news and I listened to a man in a crisp, clean suit tell me just how many people died from today's bombings, famines, diseases, and shootings, I felt a little piece of my faith in this merciful higher power tear off and drift away. It seemed as though the further my education developed and the more I saw of the world, the further I drew away from this idea of an all-forgiving, all-loving "God". Ultimately, all that was left of my spirituality was an undirected sense of intellectually curious agnosticism--or rather, a genuine "I don't know" paired with an open mind.

But to give this transition a timeline, my theological journey, or rather *anti*-theological journey, began when I was seven years old.

My dad had taken me into a room after a long phone call with my mom. I heard the yelling, but I didn't think much of it. He got to his knees, grasped my shoulders, looked me dead in the eye and stated in a tone so serious I had no idea what to make of it: "Ellie, I need you to remember something. You hear me?"

I nodded. I heard him just fine.

"Your mother Laurie and I . . . what we had, it was special. We were married. When you're married, it's forever. Okay? Forever. When you grow up and get married, remember that God views it as forever. Okay?"

"Okay, Dad."

It wasn't until years later did I truly understood the irony of his words--and her name was Jessica, my dad's first wife. Then her name was Laurie, and then Michelle. I half expected my father to get cursed if some holy being really valued marriage as much as he claimed. But after years of prosperity and financial success on my father's part, I started to question whether it meant anything at all. Whether the relationships I grew up with--Hermione and Ron, Cinderella and Prince Charming, Ariel and Eric--were expectations that I should have for both the people around me and myself. Was love something real to be sought after or just a half-thought, idealized and fundamentally artificial dream? Where was God in these relationships? If he had as much value in them as my father seemed to believe, why did so many of them fall apart? What did that say about God?

I didn't really know what I thought about this idea of a higher power growing up. I never gave it much of a second thought, preferring to deal with conflicts at hand rather than talking to forces I couldn't see. Granted, I wasn't against the idea of Catholicism; rather, I didn't fully understand it until I was ten years old and my parents forced me to transfer from public to private school. I wasn't opposed to the change--the year and a half I spent at my public school consisted of teasing, name-calling, and your average fourth-grade bullying and my mom insisted that the kids and teachers at Ave Maria would be much nicer. They had God in their lives, after all. Didn't that make people nicer? More welcoming? More ethical?

And I believed her. At least until I received a detention slip for standing at Mass when you were supposed to kneel and sitting when you were supposed to stand, and for questioning why on earth it mattered in the first place. I believed her until my friend yelled at me for chewing the bland flatbread cracker I was given at church, that was "disrespectful". I believed her until I took home a C in Theology, because I wasn't "believing" the right way--silent, obedient, and unyielding. I had an attitude, they said. I asked too many questions. They couldn't understand why I refused to believe.

I couldn't understand why, either. As I search through the furthest and deepest corners of my memory, I cannot think of a single time where I didn't question why the "Our Father" wasn't "Our Mother" or why the "Eucharist" sat in a box of solid gold on the altar while there were people in the world starving. I cannot think of a single time where I felt as though I were actually speaking to some higher "great, almighty father" as I got to my knees and thrust my hands together in prayer. Eventually I came to the realization that I wasn't outright "refusing" to follow this one way of life that I was raised around--more accurately, it was my fundamental disagreement with the uniformity of organized religion and all the corruption and lack of individuality it entailed that had me drawing away from it.

When I was fifteen years old, my father, brother and I visited our friends in Mazatlan, Mexico over spring break. Familial conflict had our small combined family spread across the continent--my-stepmother and stepsister being somewhere in Florida visiting family of their own. The timing of this trip happened to fall right over my birthday, and although I was dejected over the fact that not everyone was there to celebrate, I also understood that with relationships came conflict. In the grand scheme of things, I really had nothing to complain about.

The sun was just beginning to set over the ocean, turning the water into a gigantic sea of fiery reds and yellows, shooting beams of light across the sky and silhouetting the islands in a way that looked so picturesque it was as if God had taken his inspiration straight from an oversaturated postcard.

My father, brother, a few family friends, and myself had just come back to the hotel room after an evening of exploring and cake-eating. My father had been going on about a gift he had for me--he was excited to give it to me, and as anyone else would be I was excited to receive it. His enthusiasm was contagious.

"Ellie," he said, after having practically sprinted into his separated hotel bedroom and returned with his hands behind his back, a smile on his face. "It's your sixteenth birthday. And I think the most important thing to do is make sure that we're celebrating it with God."

Already my borrowed enthusiasm was beginning to drain out of me, leaving behind a sour sense of dread, a bitter taste in my mouth. My father and I had differing views--he claimed himself to be a preacher while deep down I knew I was a heathen.

But I played along. It was better not to argue--not now, not in a way to spoil the mood. I nodded, plastering a smile onto my face.

He brought his hands out from behind his back and presented me with a small box. It fit perfectly into the palm of my hand, pure white as if to allude to what was inside.

I opened it.

It was a ring. A dainty, silver ring, encrusted with diamonds, reflecting the dim artificial light of the hotel room and glittering attractively from where it sat in the center of the small box. It was beautiful.

"It's white gold." My dad said, carefully assessing my reaction with a certain air of elation. "Do you know what this means?"

I paused for a moment and shook my head slowly. ". . . .No, I don't."

"It's a purity ring." He said. "You wear it on your left hand as a symbol . . . a *promise* between you and God, saying you'll stay pure until you get married. Only your future husband can take this ring off. You can replace it with your wedding ring."

Suddenly, the jewelry in my hands seemed slightly less attractive. I felt as though the thin, beautiful ring weighed more than it should have. My dad's words didn't sit right with

me; it left something rancorous and unpleasant in my mouth and stung like a barb in an odd place right behind my eyes. I wasn't bothered by the fact that he didn't want me having sex--that was expected--but I felt as though some inherent freedom I had to do as I pleased with this body I had somehow, by some higher means, ended up in had been taken away from me. I felt as though this ring was a symbol of being controlled by someone who wasn't myself--watched continually by some Big Brother figure, only to be condemned when intimacy inevitably presented itself. I felt uncomfortable in my own skin, as if my privacy had been violated, as if my virginity somehow increased my value as a person in the eyes of God.

But I smiled anyway and thanked my father for the gift, doing my best to ignore the nagging, grating feeling of forced capitulation under some invisible force that I suddenly felt as I slipped the ring onto my right ring finger, as if that could somehow negate the meaning behind it. As if somehow, wearing it "wrong" could turn a symbol into an object, a proclaimed hard-standing yet fundamentally theoretical fact back into a mystical idea, a question--or a series of questions-- nobody really knew the answers to.

As I ponder these questions, seated under a colorful chandelier at my dining room table in the comfort of my home, the bright afternoon sun casting bars of unbridled light across the table, I hear my father in the next room over mention taking my family to five o'clock mass. And I can't help but feel that bitter taste rise again in the back of my throat. But after a moment's thought--my fingers paused at the keyboard and my eyes drawn up towards the opposite wall--I realize that there is a sense of peace in knowing without a shadow of a doubt where I stand--in a state of comfortable uncertainty and acknowledgement that everyone can and will believe in what they feel most negates their fear of the unknown. Whether those answers present themselves uniquely to an individual in the form of a holy cross or a lowercase *t*, is, in the purest and most fundamental sense of the word, *theology*.

Awake

By Kirk Wailblinger

The phone rang. It should not have. No ordinary caller called at that time of night.

"Hallo, Mama," my mother answered. *Why would Oma be calling? It's six o'clock in the morning in Germany.*

"Ah, nein. Was ist passiert?" *Oh no. What has happened?* She listened for a long time. "Es tut mir sehr leid, Mama." *I'm so sorry, Mother.* Then, they hung up.

"Opa is in surgery right now. It looks like he may not survive," my mother told us. How should we react to such ill news? My brothers and I had been playing a board game, enjoying ourselves, but now we learnt that we might lose our grandfather.

"What happened?"

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My grandfather awoke. His abdomen felt uncomfortable, but it did not concern him. At seventy-five years old, one often has aches and pains. So, he went about his day. He read the newspaper, he cleaned the dishes, he watered the plants. During his *Mittagspause*, the mid-day break so important to Germans they have their own word for it, he sat in his lounge chair to read a book. However, when he wanted to get up, his abdomen sent an intense jolt of pain through his body. He began to feel slightly light-headed. He called to my grandmother for help. She came and, quickly realizing he needed to go to the hospital, promptly called for the ambulance. *No, not the hospital. Not again.*

After an uncomfortable ride to the local hospital, my grandfather felt more faint and had trouble focusing. An ultrasound was taken, a CT scan performed. The supposition was that a gastrointestinal condition caused the abdominal pain, but exactly what sort of condition remained elusive. Without a diagnosis, but rapidly worsening, he was sent to the hospital in the nearby city of Ulm, to be seen by more experienced and better-equipped professionals.

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Her husband undergoing examination, my grandmother anxiously awaited word of his progress. After an hour of worry and suspense, a doctor came to speak to her.

Does he have any family of history of heart disease? he asked.

No, why do you ask?

He says he believes he may have aortic aneurism.

Then you had better take him seriously! You must check for blood immediately. Do as he says.

Before he retired, my grandfather profession had practiced medicine in his town. He had an outstanding memory and knew the details of even the most obscure medical conditions, perhaps because he had a fair number of them himself. Above all, he specialized in one particular skill. *Diagnosis.*

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Flying through the hospital corridors on a bed wheeled by technicians, my grandfather grew fainter and fainter. He began to enter a state of delirium. Through the barriers of his mind, he managed to issue commands to his surgeons. *Be very careful when you patch the artery. Do not give me any of these medications; they will kill me. You must stay focused when you operate. I will know.*

Panic coursed through him as he recalled his previous operation. The flashbacks horrified him. *I must live through it again.*

As the drugs entered his system, my grandfather felt himself unable to move. He lost his sense of smell. He no longer could feel the table beneath him. *Air.* His lungs would not obey his commands. They moved at their own pace. But he would never sleep. And he was *listening*.

The clothing was removed from his torso, and my grandfather listened as a marker drew a line on his skin above the sternum. He heard a buzz. The Saw began to spin. He listened to the noise of the rotating blade approach his skin.

When at last it made contact, the Saw let out a high-pitched whine, as though revolted at its gruesome task. Through the skin it cut, then dropped pitch as it entered bone, cleaving the sternum in two. The Saw's work now finished, the surgeon's gloves reached into the split chest and pulled it apart.

"Mein Gott!"

Fortunately for him, my grandfather could not see what lay before the surgeons. Blood burst from the incision in his chest. It squirted in regular pulses from the aorta, filling the chest and running down onto the operating room bed. The sheets stained a deep crimson hue and wrinkled with moisture. Donated blood flowed into my grandfather's veins, but, as quickly as it entered, the scarlet fluid escaped through the gaping hole in his artery. Death seemed imminent.

Though before the light-headedness had dulled his thoughts, my grandfather's mind now pierced the haze caused by the deprivation of blood to the brain, compounded by the drugs. He listened intently, analyzing the tone of alarm audible in every syllable of the surgeons' words. *Is this how I die?* The claustrophobia tormented his mind relentlessly. Terror took hold; he would have no reprieve from the waking nightmare.

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The technical term is "ruptured abdominal aortic aneurism." This condition ranks among the most fatal of injuries. In a fully functional body, the heart pumps blood through a single pathway, the aorta, in order to dispatch it to the rest of the body. When this artery ruptures, the body dies extraordinarily rapidly, deprived of blood. Of patients who receive such an injury, most perish before the ambulance arrives. Eight of ten patients lose their lives before arriving at the hospital. And, of those who make it so far, a quarter die before receiving examination. Without blood, the body must die.

Yet, against all odds, my plump, aging grandfather still lived, albeit in a hospital room, undergoing one of the most traumatizing experiences of his life. Though numbed and paralyzed by the anaesthetics, my grandfather never lost consciousness or memory from anaesthesia. He suffered from a rare condition through which the surgical drugs completely inhibited most of his senses, as well as locomotion, but not the ability to hear. Almost all those who experience the same condition develop flashbacks and post-traumatic stress disorder from the first operation. Thirty years prior to the aortic rupture, my grandfather had had a minor procedure performed in his sinuses. The experience horrified him to the extent that

he resolved never to undergo surgery again. To this end, he refused treatment by any medical professional, lest anything requiring an operation arise. Better to accept sudden death than to risk the torture of his mind once again.

Hence, my grandfather's horror at the anticipation of the torture to come, when he diagnosed himself with a rupture of the aorta. His strength of mind, however, overcame his terror. Knowing what was to come, he submitted himself to the ultimate torment willingly.

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My grandfather's experience embodies an extreme case of the rape which Richard Selzer details in his story "The Knife." In Selzer's story, the knife violates the body: "One listens, and almost hears the whine—nasal, high, delivered through that gleaming metallic snout. The flesh splits with its own kind of moan. It is like the penetration of rape" (104). Who listens? The surgeon? His assistants? In Selzer's story, the patient does not hear. He sleeps, and the rape has occurred only in consenting to the procedure. The rape is anticipatory, the horror merely in the pre-emptive imagination of the violation which the patient believes will occur. That rape cannot compare to the rape of my grandfather. Though terrible, it pales next to the combined atrocity of experiencing paralysis and listening to surgeons, with whom one cannot communicate, while they tear apart one's body whilst knowing that one's prognosis overwhelmingly favors death.

Selzer's metaphorical Knife represents more than an instrument of rape. At times, it participates in a holy rite. Selzer writes, "In the beginning, there are vows, taken with all solemnity. . . . At last one emerges as celebrant[;] . . . you hold no chalice, but a knife" (94). In this sentence, Selzer compares the Knife to the chalice, quite the opposite of a phallus. It is instead a receptacle, vulvic. One might interpret the Knife in this case as receiving the blood, coaxing the fluid from the patient. Through the religious metaphor, Selzer's surgery becomes consensual intercourse, not assault, wherein the Knife becomes an aide to the patient, a willing partner.

However, Selzer's phrase "you hold no chalice, but a knife" can mean to reject the temporary comparison between Knife and chalice. Whereas the act of surgery *should* be priestly, it cannot be, due to the Knife. The presence of the knife during surgery evokes imagery of intercourse, yet the most common Christian faith, Catholicism, forbids its priests to engage in sexual act. Therefore, the mention of "priestliness" at all merely presents the idealized form of surgery rather than

Selzer's true judgment of it: an unholy violation of the body.

The set of characters in Selzer's story represents the most intriguing aspect of the passage. The surgeon is a fairly static character. He contemplates the procedure in which he takes part, but he does not undergo any transformation. He can only wield the Knife. And, the patient, too, is static. He exists in the story only to fear the Knife. In fact, the human characters exist solely in relation to the Knife, the true protagonist of the piece. Selzer practically devotes his entire first page to the actions of the personified Knife. "It darts, followed by a wake of red," writes Selzer, not "I cut, causing a waking of red." Selzer goes so far as to say, "My hand is its vehicle" (92). The Knife, capitalized as a name, leads, with the surgeon no more than an enabler of the Knife's bloody work. The premise of Selzer's Knife closely parallels a Borges story referenced in "The Knife," in which "The men who hold the knives are merely adjuncts to the weapons," whereas the weapons themselves are the duelists (100). Selzer's story and my grandfather's differ only in that for my grandfather's version, the Knife is the Saw.

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After three hours of mortal terror, my grandfather sensed his body returning to the control of his mind. Pain replaced numbness, but at least he could breathe again. Against all odds, he had cheated death, diagnosing himself and ordering the life-saving procedure. Twenty-eight liters of blood had bled from my grandfather during the operation. The body holds just five liters at once.

Alas, his body had not yet finished to heal. Just a day thereafter, more terrible news came to him. The doctors had partially repaired the aorta, but blood continued to seep out of the artery. The only possibility for survival mandated an additional surgery. *Another surgery*. Dreadingly, he prepared for another session of torture.

One as strong as my grandfather might endure a single operation with limited psychological consequences, but two in rapid succession should surely have driven him to the brink of insanity, if not well past it. However, miraculously, the second open heart procedure did not drive him mad.

Nor did the third. In fact, during four grueling weeks, my grandfather withstood the rape of surgery a total of *six* times.

And he is *still* alive and perfectly sane.

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The Most Fickle Man in Fenway

By Josie Russell

In our culture, sports is not something that you do but something that you are. This is true for me in the most literal sense, for I am named after two professional sportsmen who my grandfather swore descended from God: Joe DiMaggio and Joe Sakic. Although reason behooves me to doubt the verity of my grandfather's claim, I certainly recognize the parallels between sports culture and religion. Being a sports fan can be emotionally and spiritually demanding because it requires a constant practice of faith and devotion in an environment frequently determined by chance. Sports teams are what we believe in, sometimes inexplicably and against all odds, with every fiber of our soul. Thus, our allegiance defines us. The question, „Which team you support?" is synonymous with „Who are you?"

I am a Yankees fan as much as I am Josie Russell, and with this label comes certain implications of exactly who I am not. Sports culture can be exclusive, and it would be an act of heresy for a Yankees fan not to display utmost contempt at the Red Sox and anything affiliated with them. When I strode into Fenway Park in 2013 to watch the Boston Red Sox versus Detroit Tigers, I knew a few things about myself: I loved Abo's Pizza but not Dunkin' Donuts, preferred Frank Sinatra over Neil Diamond, and thrived off watching the Red Sox lose. I had an MLB Playoff ticket in my hand, cracker jacks in my pocket, and a Detroit Tigers jersey on my back, and I was ready to prove myself as a faithful Red Sox anti-fan.

Which is why it felt like an identity crisis when I found myself not booing but, rather, cheering on my feet as Red Sox legend Dustin Pedroia drove the ball to the outfield and gave the home team its first hit of the game.

I had expected my body to launch itself from its stadium chair in reaction to the Sox at least once throughout the contest, but I never thought it would be with an air of appreciation rather than outrage. Instantaneously, as a desperate attempt to retain my societal identity as a True Yankees Fan, I began to justify my behavior with (absurd) explanations: maybe I had felt something wet on my seat and had stood up as a reflex . . . or perhaps our pitcher had thrown a changeup that hung too long in the air, so I was standing up to show disapproval of the catcher's poor pitching call . . . or maybe I got on my feet to see over the seven-year-old sitting in front of me?

Despite my frantic search for an excuse, the fact remained that I had displayed an act of homage to the Red Sox as they rallied behind their star player's offensive success. These fabricated explanations for my behavior may have quelled the minds of other fans if they questioned me, but deep down I

knew I was a fraud. By cheering for the perceived enemy, I had shirked my duties as a New York City baseball enthusiast. All my previous demonstrations of loyalty to the Yankees now felt hollow and spurious, and my kneejerk reaction to Dustin Pedroia's hit left me feeling faceless and wormlike at my core. I had spent a lifetime building up a certain identity, only to find my intuition fighting against it. If I no longer fit society's definition of a Yankees fan, how could I define myself? Was I anything at all?

My chin fell as I retreated back into my seat after Pedroia safely rounded first base, and I caught a glimpse of the embroidered orange „D" for Detroit on my Tigers jersey. The plastic string material felt as fake and cheap as my sense of self. After all, I had only bought the T-shirt for this playoff game—I didn't know the name written on the back and, frankly, didn't give a damn. I had never been to their home stadium and none of their history intermingled with mine.

Dejectedly, I began pulling on the synthetic Nike swoosh that had been festooned haphazardly on the corner of my sleeve. The hypnotic tugging sensation pulled me further from reality and into the recesses of my mind, and from that place emerged a memory of the most interesting sports apparel I had ever encountered.

Kieran Lenssen had worn the same baseball cap to school every day for seven consecutive years when I first met him, but it had been in his life for much longer. His uncle, a Boston man through and through, purchased the hat during the 1986 World Series, when the Red Sox blew their chance of a championship in such spectacular and embarrassing fashion that it went down in baseball history. When this man's nephew was born, he placed the Red Sox cap gently on Kieran's head and superstitiously declared it as a sign that Boston would come out victorious in the World Series that year. Naturally, the team fell short in the 1995 playoffs, but their suffering didn't last much longer. Finally, in 2004, the Red Sox won the World Series for the first time in 86 years, lifting the Curse of the Bambino and saving the citizens of Boston from baseball purgatory. Kieran and his family had been in the stands to witness it, with the emblematic ballcap perched on his cranium. He hadn't taken it off since.

You couldn't tell that Kieran's hat was a Red Sox hat at first glance. Its original tri-sectioned structure draped lackadaisically on his head, and one of the front-facing sections had been worn through so completely that it revealed a few square inches of his hair. Its fabric, made of traditional solid-color wool, had

faded from midnight navy to a speckled grey, the socks logo from brilliant red to burnt beige. Lengthy fringe erupted out of the ballcap's seams. It was Kieran's own wearable velveteen rabbit. While my newly purchased Tigers hat featured a broad obtrusive brim made of plastic and a cotton sweatband, Kieran's cap had a visor stiffened with buckram and was lined with authentic leather. The only mark on my Tigers cap was a tacky gold sizing sticker. Kieran's hat, in contrast, was peppered with grass stains, sweat stains, snags and rips, smells and splotches—damage from all the experiences it had lived through atop his head.

Slowly, it occurred to me that although my unblemished state-of-the-art cap had higher monetary value than Kieran's, its value in sports culture was significantly smaller in comparison. Unlike Kieran's cap, my unblemished state-of-the-art hat was not decorated with figurative badges that represented meaningful and personal interactions I had within mass sports culture. Instead, all it had was a team logo. Maybe, I thought, the meaning of sports lies not in the teams themselves but in experiences we have while supporting them, thus making the differences between teams arbitrary. . . .

A sound from back and to the left of me broke me out of my stupor. It had come from the section in right-center field-—the section commonly known for its cheaper seats and even rowdier company. An explosion of shouts and jeers had just erupted from their domain, but it wasn't triggered by a controversial call from an umpire or an error from the home team. Instead, all the attention was on two men, almost fully naked and painted entirely in orange. Smirking, they stood proudly with their hands on their hips and their chins turned to the sky. They reminded me, ridiculously, of two malformed, gigantic carrots sprouting improbably from the concrete floor. Indeed, the obtrusive contrast they created in the swaying sea of red and blue seemed just as outrageous and invasive as weeds in a garden. Surrounding men in Red Sox jerseys were standing up and shouting for police to come and were repeatedly trying to shove the orange men out of their spot. At first, I admit I assumed that the hostile actions from the neighboring Red Sox fans were simply in response to the two men being there, existing as Tigers fans and encroaching on their „territory." As I looked closer, however, the situation was much different.

In a hot second, two policemen with burling shoulders and wide flat mouths marched down to the flamboyant Detroit fans and uprooted them from the seats they had planted themselves in. As they were marched away, the entire section switched from gesturing angrily to smiling and clapping. From the gap in the stands there emerged two people whose seats had been apparently hijacked by the carrots. It was an old man and a young boy, perhaps grandfather and grandson. They appeared crumpled and disoriented, but as the fresh air touched their faces and they absorbed the welcoming and energetic atmosphere,

I could see their eyes ignite with passion and love for the game, for their team, for humanity.

Next to me, a jittery local kid spilt his soda as he sat down, and the edge of my jersey was splashed with sticky, caramel-colored liquid. As a form of apology, the kid then extended a scrawny arm and offered me some cracker-jacks, and as I took some, I let a few pieces flake off and attach themselves to the front of my shirt. Now, I thought, this jersey would forever hold the memory of this moment within its stains. Gone was the pristine unblemished quality of the jersey that symbolized consumerism and materialism. Thankfully, it had been banished by one of the reasons that makes participating in sports culture worthwhile: a moment of connection with someone who has an entirely different life experience than mine. Maybe, like with Kieran's hat, the clumsy wear-and-tear of my jersey could be indicative of the elements of mass sports culture that I love such as its knack for creating unity among diversity or its ability to induce a sense of camaraderie as I ride the emotional roller coaster of a sports game with others.

As I looked onto the crowd, I saw countless Kierans, grandfathers, grandsons, and local Boston kids in the audience. Young tots with innocent eyes were enjoying the game from the laps of their fathers, and some brought along their miniature baseball gloves in hopes to claim an errant fly ball. Bespeckled older men were perched rigidly on the edges of their seats as they kept cramped and detailed score of the game, incessantly analyzing ballplayers' stats together. Families with deep-seeded history in Fenway Park were dressed in authentic, traditional gear from the team's days of old. Young adolescent girls on softball teams kept up a constant stream of chatter about the sport that touched many aspects of their lives. During my observations, I was struck by how many people from vastly different walks of life were conversing amicably with each other about the triumphs and tribulations of a single team, finding common ground under one identity as a Red Sox Fan.

Eventually, my attention was pulled back to the game at hand. The score was tied up at the bottom of the eighth with the Red Sox up to bat and a runner on third base. When the hitter's bat made contact with the ball, everyone at Fenway Park knew it was going over the Green Giant, and a deafening sound rocketed throughout all of Boston. Instinctively, I felt the urge to jump up and down with the people next to me and let my voice ring amongst the cheers of the other fans. In that moment, I saw myself not as a Yankees fan, Tigers fan, or even a Red Sox fan. I saw myself as simply a sports fan, itching to celebrate all the ways in which mass sports culture has fueled my values. So, I let myself cheer for sports that night, equipped with this truth that I am Josie Russell: fickle in the teams I support but faithful in my passion for the game.

The Cities We've Built": Adamic Women in Meek's Cutoff

By Katie Armstrong

The road to the Garden of Eden points west. This is the biblical layout, in any case: having banished Adam and Eve, God posted angels on the garden's east side "to guard the way to the tree of life," and further east still was the ground that they were made to work thereafter (New International Version, Gen. 3.24). In an effort to recover this squandered paradise, American expansionists of the nineteenth century conveniently conflated the geography of creation with the geography of the frontier. Their mythos of recovery hinged not so much on the *east* to which humanity had been exiled but on its alluring and forbidden negative: *west*.

In his 1979 essay "Freedom and Domination: The Garden of Eden and the Social Order," sociologist Lester R. Kurtz writes that a subset of American thinkers in the early-to mid-nineteenth century--Kurtz names them using Ralph Waldo Emerson's term, the "Party of Hope"--believed that the "attempt to create answers to American questions of meaning and purpose turned the Eden story into a paradigm of life in the American wilderness" (454). Reclamation of the lost garden would begin with a settler colonial journey back up the Eden road. And, more, settlers would restore the uncivilized wilderness to a state of social and political purity. Settlers, after all, are "founders of political orders who carry with them a distinct sovereign capacity," an ability to install familiar political structures while colonizing an unfamiliar landscape (Cavanagh and Veracini). For nations possessed by the fervor of manifest destiny, "breaking with past political institutions and looking to westward expansion as part of a garden utopia" would enable them to resolve these "questions of meaning and purpose," especially by dispatching white settlers to begin the work of building political institutions unsullied by the industrialized eastern past (Kurtz 455).

The Party of Hope imagined that a particular figure would spearhead this project of westward expansion. In the words of American literary scholar R. W. B. Lewis, it was an innocent Adam, "a radically new personality, the hero of the new adventure; an individual emancipated from history, happily bereft of ancestry, untouched and undefiled by the usual inheritances of family and race," who would specially apprehend and organize the garden utopia (qtd. in Kurtz 455). Literary critic Annette Kolodny similarly acknowledges "the nation's infatuation with a wilderness Adam" as it contemplated the ideal approach for colonizing the western borderlands (xiii).

An individual unchained from his burdensome history--i.e., original sin and the toil that followed--could settle the frontier most effectively. He could break free from the mundane (read: industrial) drudgery of the Old World east to install a fresh, agrarian Eden in the New World west.

Kurtz confirms that male pronouns, not female ones, most often applied to this expansionist fantasy--that the wilderness Adam was nominally male, in other words--when he notes that "the Garden of Eden saga has been used as a status legend [. . .] by males to legitimate male domination of females," given that "it was Eve, according to the story, who was first responsible for the eating of the forbidden fruit" (461-2). And male settlers, keen on "possessing a virgin continent," imbued the saga with an erotic yearning (Kolodny xiii). This "psychosexual dynamic," Kolodny writes, raised doubts about whether frontier women could participate in the Eden project at all; as a consequence, "real flesh-and-blood women--at least metaphorically--were dispossessed of paradise" on the western frontier (3). Kolodny also notes that "women who were at home in the wilderness [. . .] never achieved mythic status" to the same degree as the men who shared their new home (xiii). In this gendered hierarchy, then, women were barred from adopting the mythic Adamic condition. Men were the main architects of the frontier Eden; men were the public heroes of the settler colonial adventure. Meanwhile, female settlers were constrained by the "cult of true womanhood" in which they were relegated to the privacy of the home (Caughfield 7).

One recent film, however, revises this Edenic status legend for the benefit of the women whom it has traditionally excluded. The female characters in Kelly Reichardt's *Meek's Cutoff* are full participants in their Eden project, which takes place on the nineteenth-century Oregon Trail. The women in this film achieve the mythic status that they were historically denied: they do so by violating norms of time, space, and language, quitting their corporeal ranges in favor of an otherworldly place in which gender no longer constrains their ability to construct a frontier paradise. They achieve the Adamic condition and then some, even displacing men as the primary actors in the all-important garden reclamation.

From the start, Stephen Meek--the titular character in Reichardt's film--purports to be the story's wilderness Adam

as he guides a small band of American settlers across the Oregon desert. In fact, though, it is the three women in this film who come to bear the primary responsibility for delivering the group from a barren landscape unto a civilized paradise. In one of the earliest scenes, the three members of the White family huddle together aside their halted wagon to listen to the young son read aloud from the Book of Genesis. We find that we have entered this story at a moment of crisis: "[God] placed him at the east of the Garden of Eden," Jimmy White reads, "cherubim and a flaming sword which turned every way, to keep the way of the tree of life." Mankind, expelled from the garden, finds the road to the west barred--and with the threat of violence, no less, in the form of a flaming sword guarding Eden's eastern entrance. From the moment that Meek's group undertakes their journey west, the film raises an urgent question: who among these settlers can be trusted to deliver them unto the "second Eden" which Meek has promised them?

At various points in the film, we are given serious cause for doubt that Meek is, in fact, the Adamic hero of this journey. Perhaps most overt is Meek's frequent enumerations of the contents of hell (comprising bears, Indians, and mountains by the film's end). While Meek seems to have a clear idea about hell's constitution, he fails to adequately envision the constitution of paradise, especially for a man who is ostensibly guiding the group to the aforementioned second Eden. And in a similarly stark example, Glory White asks Meek about his marital history only to be subjected, along with Emily Tetherow and Millie Gately, to a foulmouthed account of his philandering with Native women (an account which Meek accordingly rounds out with a racial slur). The three women say nothing, each adopting a rigid facial expression--Glory's a sign of shock, Millie's disbelief, and Emily's disdain. The vulgarity of Meek's sexuality in this moment speaks to Annette Kolodny's criticism of the male Eden fantasy, in which men's "psychosexual dreams" so often involved a "privatized erotic mastery" of the landscape (xiii). One critical deficiency of male fantasy structures on the frontier, then, lies in the kind of gross eroticism that Meek feels so comfortable espousing in this scene.

And indeed, a masculine element is repeatedly erased by a feminine one in *Meek's Cutoff*, an erasure that finds its clearest expression in the blocking of certain shots in the film. In one instance, while the three women walk together behind the wagons--the three immersed in a private moment, as it were--the camera gently pans and tilts until Millie's torso entirely eclipses the rearmost wagon, including the man supervising its team of oxen. In another instance, Glory hangs laundry on a temporary line, draping a blanket in such a way to completely obscure the man on horseback beyond. The

deletion of the male body in these instances suggests a rather powerful notion: frontier women have the capacity to "evade the power and cultural pervasiveness of male fantasy structures" altogether, traditional conceptions of the maleness of the wilderness Adam be damned (Kolodny xiii).

If the falsely Adamic man must be unseated, then, it seems that the film's women have the capacity to take his place. More than the simple erasure of the male body, we find that the three women's positions in the frame can also accomplish something more--something transcendent. Emily, Millie, and Glory frequently stand or walk in a triangular arrangement, as if they are positioned with celestial reference to one another. And, indeed, one shot in the film depicts three bright stars in a loose triangle. These arrangements prompt us to consider that the group's navigation through the Oregon desert will no longer hinge on Meek's earthly whims, but rather on the supercorporeality of these three astral women. In this way, the women are elevated closely to the Adamic condition, fulfilling the notion that on this western frontier, "a cultivated garden [would be] [. . .] controlled by those at the apogee of humanity" (Caughfield 15).

To some degree, Emily Tetherow goes even further to adopt the Adamic role than either of her other female companions. Her defiance of human boundaries is especially apparent in her interactions with the Indian ("the Cayuse") whom the group has captured and on whom they come to desperately rely in their search for potable water. In one seemingly dual gesture--one of both goodwill and self-interest--Emily crouches at the Cayuse's feet to mend his ripped shoe. At the same time, however, she works to elevate herself above the Cayuse by other means: "You can't even imagine what we've done," she mumbles to him as she sews. "The cities we've built." Deploying her apparent cultural supremacy here is a power play--and a somewhat banal one, at that--but more interesting is Emily's specific claim to *cities* in this moment. Emily herself has built no cities at all, and most all of the cities to which she seems to refer were likely built well before she was even born. One way to read Emily's claim is as an exercise in the "flexibility of true womanhood" beyond a purely private sphere, a frontier-relevant idea for which Adrienne Caughfield argues in her 2005 book *True Women and Westward Expansion*. Compared to the barren Oregon desert, we can think of cities--as Emily seems to do here--as decidedly public spaces, ones which the settler colonial project would hopefully reproduce and refine in "wild" frontier settings. Emily's assertion that these spaces are in some part *hers*, then, bespeaks her readiness to expand the cult of true womanhood, to adopt an Eden-building ability for herself and for (white) women like her.

In perhaps the film's most desperate moment, the frantically thirsty group is rocked by a sudden panic that the Cayuse has been secretly conspiring with members of his tribe to escape captivity. While the settlers argue about this possibility, the Cayuse physically distances himself from them. Gazing out over a ridge, he begins to chant to himself, or perhaps to some other party whom we are not invited to know. But Emily, lurching toward him, intervenes in a way that demonstrates her radical creative capacity. She translates his chanting to the rest of the group, stammering over her words as she conveys his apparent message: the Cayuse *will* locate water, and they need only follow him a little further to find it, too. This act of translation acts as a balm for the bickering group, and they resolve to press onward. Until now, Emily and the other members of the group have made little genuine attempt to understand the Cayuse's speech, instead insisting on making their own desires known to him through hand gestures, heavy enunciation, and the offering of a blanket. But Emily's moment of clarity here is a genuine and powerful transcendence of language. In this instant, she provides for the group that which Meek has repeatedly failed to provide--a last substantive chance at survival, a final grasp at that elusive second Eden.

A final key aspect of the female Eden-building endeavor in *Meek's Cutoff* arrives at the film's conclusion when the group idles in awe beneath a lone half-dead tree. As he formally cedes his authority to the Tetherows, Meek makes a final admission to Emily: "This was written long before we got here." Indeed, what literally precedes the film is a stitched rendering of the film's title, which is ensconced by the same tree we see at the film's end. Embroidery, then, is the distinctly feminine medium by which "this" conclusion to the story was foretold, a fact that Meek has finally recognized (while Emily has seemingly known all along). That such an activity can be framed as an act of *prophesy*--one of the ultimate denials of the limits of human time and experience--speaks to Henry James the Elder's contention that "nothing can indeed be more remote [. . .] from distinctly human attributes, or from the spontaneous life of man, than this sleek and comely Adamic condition" (qtd. in Kurtz 475).

For the Party of Hope, a cheap imitation of the lost garden was not the standard to which settlers should aspire. Rather, their "vision of progress in America was not the static pre-fall Eden [. . .] but a dynamic process-filled vision" (Kurtz 457). In *Meek's Cutoff*, Kelly Reichardt imagines women as essential executors of this dynamic vision. In breaking from temporal and earthly constraints, the women in this film demonstrate their ability to inhabit the Adamic role that the Party of Hope so vigorously endorsed. Reichardt assures us that women, not men, might well have had the superior capacity to adopt the "radically new personality" required of

the wilderness Adam. Given the latitude to do so, they might well have eschewed their sex's onerous social history in order to install a more ambitious version of the second Eden on the settler colonial frontier: a paradise simultaneously public and private, political and domestic, one that elevated the agency of female settlers rather than diminished it. This version of Eden, in short, would be one of which white female settlers could not be dispossessed because it would be born of a uniquely female revision of the Edenic status legend.

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Obliged to Have a Test-Tube Baby? : Why Genetically At-Risk Parents Have a Moral Duty to Screen Embryos for Disease

By Antonia Lin

It's every parent's worst nightmare to discover that their newborn baby, whom they hope and expect to be healthy, is actually severely and incurably ill. Oftentimes, these illnesses result not from harmful chemical exposure or viral infections but from problems that arise at conception, passed down from the parents themselves. Errors in genetic code, which are responsible for debilitating diseases such as cystic fibrosis and Tay-Sachs syndrome, can be passed from generation to generation, independent of parents' socioeconomic status or the environment they live in. In the worst cases, children are entirely dependent on caregivers, suffer severe health problems, and succumb to a premature death. Until recently, parents were powerless to prevent passing on their harmful genes to their children. However, with the rise of in-vitro fertilization (IVF) and preimplantation genetic diagnosis (PGD), which are techniques that allow doctors to create embryos outside the uterus and then screen them for harmful genetic mutations early on, prospective parents can now prevent passing on their disease-causing genes to their children.

Currently, there is no expectation for parents who are carriers for disease to choose IVF--that is, individuals may decide to conceive via IVF if they so desire, but no moral obligation exists that compels them to do so. If a couple decides to use IVF to conceive, they're additionally given the choice of whether or not to pursue PGD prior to implantation. Both processes are entirely elective, and those who use IVF are not expected to also use PGD. Even though, for parents who are known to be genetic carriers of debilitating disease, there is increased risk of having a severely ill child if no genetic screening is done, respect for parental autonomy generally takes precedence over other considerations. However, given the possible ramifications for having an extremely ill child, do parents who know that they're carriers for genetic disease have a moral obligation to use PGD to conceive? Opponents worry that, should this obligation exist, parents could be subsequently compelled to select embryos for one sex over the other, especially for parents who are carriers of sex-linked diseases. Additionally, some are concerned that making PGD a duty in the interest of the child's health could also justify the use of PGD for non-life-threatening characteristics as well, such as for characteristics that might be more advantageous to offspring later in life but don't actually improve the child's health. Such

trait selection could open the door for active gene editing and the creation of "designer babies," giving children conceived using IVF an unfair advantage over their peers. These fears, however, are either easily preventable with the enactment of new public policies or based upon incorrect assumptions about gene heritability and editing capabilities that vastly underestimate the complexity and difficulty of trait editing.

How Can Genes Cause Disease?

Within the majority of human cells, there exists a set of instructions essential for human development, functioning, and reproduction, known as the human genome. The genome contains a multitude of different individual genes that encode for specific proteins essential for cellular functioning. These individual genes are compartmentalized into 2 sets of 23 distinct packages of information, otherwise known as chromosomes. Each person receives one set of genes from his or her mother, and another set of from his or her father, and while each set is very similar, the instructions might be slightly different between two genes. This variation among genes is generally innocuous; it is, after all, the reason why there is so much diversity among organisms of the same species. However, this is not always the case. Sometimes, when someone receives defective genes from either one or both parents, illness can result. Dominant genes require only one incorrect copy to cause disease whereas recessive genes generally require two copies of the mutation to be harmful. However, in the absence of a second copy of the gene, as is the case sometimes if the gene exists on the same chromosomes that determine sex, one copy is sufficient to cause disease and may do so even if it is recessive. Thus, someone who has one normal copy and one bad copy of a gene, otherwise known as a carrier, might not be ill but can pass on the bad copy of the gene to his or her children. If the other parent similarly passes on another bad copy of the gene, the two unaffected parents can have an affected child. However, both affected parents and unaffected carriers are regarded as genetically at-risk because they both have the potential to pass the genetic disease-causing mutations to their offspring.

In contrast to bacterial or viral infections, which cause illness as a result of infection by a foreign agent, gene mutations inherited from one's parents are present in every body

cell. Though not every cell might be affected, depending on the proteins that they produce, the set of faulty instructions passed down from one's parents is present in every cell and is replicated every time the cell divides. Thus, while medications can be useful at eliminating some diseases acquired through an external host, genetic disorders cannot at this time be entirely cured.[1]

What is IVF and PGD?

In-vitro fertilization, or IVF, is a form of assisted reproductive technology that combines the egg and sperm outside the uterus in order to allow fertilization to occur outside the body. The process involves harvesting eggs from the woman and either mixing them or injecting them with sperm to facilitate fertilization. After fertilization, the embryo is allowed to grow and divide for several days before it is placed back into uterus, where it will, hopefully, implant and continue to grow. Generally, several eggs will be harvested, as fertilization and successful implantation cannot be guaranteed even with lab techniques. Pregnancy is considered to begin once an egg has successfully implanted.[2]

After about the third or fourth day of growth, and prior to implantation, the embryo can be screened by a technique known as preimplantation genetic diagnosis (PGD), wherein scientists take one cell from the embryo and examine the cell's genetic material for specific disease markers. This is commonly done with fluorescently labeled probes for common gene mutations, which will anneal to the cell's genes if the faulty sequence is present and visually signal the presence of the mutation. In addition to conducting fluorescence probing, PGD can also be done by sequencing the gene of interest extracted from the embryo and comparing the sequence to known disease-causing sequences (Theisen, 2008; "Embryo Screening Procedures", n.d.). By conducting PGD, scientists can determine whether or not the embryo has any major genetic diseases prior to implantation; in this way, parents can be certain that they are not passing on disease-causing genes to their children. The process is currently optional; those who undergo IVF are not required to pre-screen the embryos prior to implantation.

What are Parental Obligations to Their Children?

Many would most likely agree that parents have a duty to prevent undue harm to their children. Where opinion

differs, however, is the matter of when this duty begins. Some might say that obligation exists once the child is born, but the multitude of guidelines surrounding prenatal care suggest otherwise. Governmental agencies such as the Centers for Disease Control (CDC) and the Department of Health publish extensive information about risk factors to avoid during pregnancy. Once pregnant, mothers-to-be are commonly expected to make necessary lifestyle changes to ensure that their children are healthy throughout the pregnancy, not just after birth. Additionally, mothers who continue to follow behaviors such as drinking, smoking, or doing drugs which jeopardize the health of the developing child are commonly stigmatized by their community, which indicates that the expectation for parents to maintain their child's wellbeing and to prevent unnecessary harm begins far before birth. But, is it possible that this parental obligation is present even earlier?

There are a number of indicators that it is. The existence of family planning services and products is evidence to support the expectation that parents be prepared and capable of caring for children before having them. For example, teen anti-pregnancy campaigns indicate the general consensus that parents should first possess before having children emotional maturty and financial stability before having children, teens do not generally have. In dissuading younger people from conceiving too early, anti-pregnancy campaigns attempt to prevent those who are inadequately prepared from having to fulfill parental obligations before they are capable of doing so. In addition to having a set of pregnancy guidelines, the CDC also has a wide number of pre-pregnancy measures that prospective parents are advised to adopt even before conceiving. People are recommended to quit smoking, to remove any sources of violence, to either control or treat STDs, and to get vaccinated to avoid harming future children. Included also in the CDC's recommendations is an existing set of guidelines directed towards those with a family history of disease or who are at-risk for having affected children. The existence of genetic counseling services, which aim to educate and provide guidance for those who are concerned about future children being affected by genetic problems, is further evidence that some kind of expectation already exists for people to prevent undue harm to their offspring before conception occurs.

It's apparent, then, that an obligation to prevent undue harm applies to not only parents but also to prospective parents. Genetic counseling services are evidence that there already exists an additional expectation that parents who are at

risk for passing on genetic diseases take additional measures to ensure the health of their children. Why, then, are genetically at-risk parents not obligated to use PGD in the same way that parents are ethically compelled to cease smoking, to adhere to a healthy lifestyle, and otherwise to avoid risk factors that might threaten the health of their children?

One argument is that imposing this obligation would violate parental autonomy. Opponents argue that parents have the right to choose whether or not to use laboratory technology to conceive and, furthermore, reserve the right to know or not know whether or not their child will be born with a genetic disease. Yet, this argument for preserving parental autonomy could be made for any other expectation regarding conception and pregnancy that has already been widely accepted as having priority. For instance, prospective mothers do have the right to drink as they please, but concerns that the detrimental effects of such actions on the developing fetus outweigh concerns about preserving the mother's right to have alcohol. As such, mothers who choose not to cease alcohol consumption during pregnancy generally face stigma regarding this choice and are dissuaded from doing so by doctors and peers alike. It is apparent that preserving parental autonomy cannot always be the primary concern. Ron Green 1997), in the *Journal of Law, Medicine, and Ethics*, suggests that parents have the primary obligation "not to bring a child into being deliberately or negligently with a health status likely to result in significantly greater disability or suffering, or significantly reduced life options relative to the other children with whom he/she will grow up." When using this standard to evaluate the acceptability of parental actions, one can also determine the importance of maintaining parental autonomy in different situations. In the case that preserving autonomy is not harmful to the developing child, a parent's freedom to choose should be protected. However, this right becomes much less defensible when doing so comes at the cost of the child's long-term health.

Are at-risk parents violating this obligation when they choose to implant an embryo without first using PGD? Those with genetic diseases often have significantly decreased quality of life or life span and thus also have considerably poorer health as compared against those in their age, community, and socioeconomic-matched group. Children of parents who are carriers of the disease are much more likely to receive the nonfunctional gene than other children: depending on the gene, their chance of getting the mutation can be as high as 50% whereas others with non-carrier parents will generally fall victim to genetic diseases only as a result of chance mutation. Other parental behaviors that subject children to a much smaller degree of risk have already widely been deemed unacceptable. For example, researchers have found that prena-

tal cocaine use is actually significantly less harmful to a child's long-term health outcomes than are other environmental factors such as poverty (Betancourt et al., 2016; Fitzgerald, 2013). Yet, many would still frown heavily on mothers who persist with this drug habit while pregnant. It seems unreasonable, then, that a behavior that would pose a much greater threat to a child's health would be subject to less criticism. PGD can accurately identify prior to implantation if a child's health will be jeopardized as a result of the genes he or she has inherited from his or her parents. When the option exists, then, for genetically at-risk parents to eliminate this significant threat to their offspring's health and they choose not to take it, their children face a much higher risk than children of non-carrier parents. When such a serious threat exists, respect for autonomy cannot be prioritized over a child's welfare.

Another commonly raised objection to PGD involves the matter of gender selection. Many X-linked genes, or genes that exist on the X-chromosome, can be carried but are unexpressed in females and are detrimental in males. Serious diseases such as Duchenne's muscular dystrophy, which is a muscular degenerative disease that eventually leaves the individual paralyzed, hemophilia, which is a blood-clotting disorder, and polycystic kidney disease, which usually results in kidney failure, can seriously decrease a child's quality of life and shorten his or her lifespan ("Specific Genetic Disorders", n.d.), especially in how these diseases disproportionally affect males. There is the concern, then, that selecting for sex to prevent passing on genetic diseases can also introduce or reinforce a gender bias (Ethics Committee of the American Society of Reproductive Medicine, 2004). It is not a new concern: lawmakers and ethics committees worldwide have been putting forth varying recommendations regarding the ethicality of preimplantation sex selection since 1983 (De Wert et. al, 2010). However, in *Facts, Views & Vision in ObGyn* (2010). De Wert and Dondorp note that there generally seems to be a consensus among nations for the use of sex selection for medical reasons. Rather than the value of the gender, sex selection for the purpose of preventing disease prioritizes health and, as such, cannot be said to reinforce any gender bias (Ethics Committee of the American Society of Reproductive Medicine, 2004). Additionally, although it has already been established that gender selection for medical reasons is acceptable, the issue can be eliminated entirely with new policy enactments. Though there currently exist guidelines about permissible uses for PGD, there are not many explicit laws detailing acceptable practices. If doctors are prohibited from revealing the sex of the embryo in the course of performing PGD and instead select only for embryos that do not carry the mutated gene, the choice becomes not between an affected male embryo and an unaffected female one but between two or more embryos of varying health.

[1] More information on the genetic basis of disease can be found at http://sitn.hms.harvard.edu/wp-content/uploads/2015/04/CrackingtheCode.pdf and https://www.nlm.nih.gov/medlineplus/geneticdisorders.html.

[2] More information about IVF can be found at: https://www.nlm.nih.gov/medlineplus/ency/article/007279.html.

Some might also question why genetically at-risk parents would have the duty to reduce harm to their children through PGD but do not have the duty to select for advantageous traits as well (Singer, 2007). To answer this, we can refer back to the parental obligation outlined by Ron Green. Parents have a duty to prevent undue harm to their children that would seriously and adversely affect their child's health as compared to the average health of the other children in the same "birth cohort" (Green, 1997). Parents who do not use PGD to select an embryo with advantageous traits do not pose a significant detriment to the child's health or life options and as such, do not have any obligation to use PGD for purposes other than to ensure the health of the child. Admittedly, there exists also an expectation for parents to act in a way that would be beneficial to their children; however, in contrast to the parental duty to avoid harm, which has no exceptions, the parental duty to benefit is much less stringent. Otherwise known as a perfect duty, as defined by philosopher Immanuel Kant, the parental duty to prevent harm must be fulfilled and has no legitimate exceptions. Regardless of a parent's economic status, class status, or social situation, he or she is always expected to prevent harm to his or her child. On the other hand, the parental duty to benefit would likely be categorized as an imperfect duty, or one that individuals generally ought to, but do not necessarily have to, fulfill and, so, have more leeway. While parents are for the most part expected to act in a way that provides an advantage to their children, how much they must do is variable. No one would fault a parent for sending his or her child to public school instead of paying for private school; similarly, no one could reasonably expect that all parents should use PGD to provide their children with advantageous traits rather than simply using the procedure to ensure their child's health.

Is Gene Editing Really a Legitimate Concern?

Aside from the moral arguments against imposing a parental obligation to select for advantageous traits, there are significant technological barriers that significantly reduce the usefulness of PGD as anything more than tool to screen for disease. There are those who disagree: in a 2009 *Canadian Medical Association Journal* article, Chantal Bouffard addresses the concern some have of the slippery slope in which allowing PGD will set the stage for genome editing of embryos in order to have children with the most advantageous genes. She posits that, because PGD allows for genetic selection of embryos, its "eugenic potential" must be addressed (Bouffard, 2009). However, given the technique's limitations, it is unreasonable to equate passive selection with active gene editing. PGD's efficacy as a diagnostic tool is already constrained by the narrow set of diseases for which genetic markers are known (Robertson, 2003). To transition from selection of healthy embryos to

deliberate embryonic editing requires that researchers are first able to identify the advantageous traits controlled by genes, to identify the specific advantageous gene sequence, and then to splice in the correct genes. To do all of this requires significant research and technologies far more sophisticated than PGD fluorescence labeling alone.

Even assuming that scientists are capable of editing the genome, fears about designer babies are based on the erroneous assumption that advantageous traits have a genetic basis at all, even though research has already proven that this is not always the case. Twin studies (Rosoff, 2012) illustrate the effect of the epigenome, or the multitude of chemical modifications made to genes over the course of one's lifetime, on one's behaviors and physical appearance. Variations in environmental factors such as family dynamic, socioeconomic status, and nutrition can play a significant role in determining an individual's physical and social characteristics even when the genetic code is the same. Additionally, for those characteristics that do have a genetic basis, the interaction between various genes and regulatory agents is vastly complicated. Contrary to popular misconception, one trait is not dependent solely on one gene. For example, it has been discovered that height is determined by a multitude of traits (Park, 2014), some of which not even directly involved in skeletal function. For those traits, then, that not only depend on the interaction of multiple genes but also are affected by environmental agents, regulation and manipulation are much more complicated. This interaction between multiple regulatory agents and external factors significantly dampens the potential of gene editing for creating "designer" babies; even if one, or even several genes, could be edited, there is no way to eliminate the effect of the environment, and thus there is significant difficulty in ensuring definitely that the desired effect can be achieved.

Drawbacks of PGD

One legitimate objection to imposing this duty to use PGD involves financial cost. One round of IVF costs around $9,000, and PGD adds an additional $4,000 to $7,500 per attempt ("Pre-Implantation Genetic Diagnosis," n.d.). Given that the success rate for PGD pregnancies is about 20%, couples who undergo this procedure might need to spend significant funds to conceive. For those who wish to have more than one child, this cost is even higher. For genetically at-risk parents who do not have the financial means to pay for the procedure, imposing an obligation to use PGD might dissuade them from having children altogether. Thus, morally compelling parents to use PGD to prevent genetic diseases might seem to indicate a bias towards encouraging more financially secure parents to conceive. That the issue exists, however, is not reason enough

to do away with the obligation; it simply calls to attention necessary changes that must be made to make the screening more accessible. Restricted access to PGD due to cost can be remedied with enactment of laws mandating insurance coverage for the procedure for those couples who have a valid medical reason to use PGD. This is advantageous for not only the parents but the insurance companies and the health care system as well. Lifetime costs of hospitalization and care for those with many genetic diseases is far greater than the cost of IVF and PGD. For example, it is estimated that the lifetime cost for treating cystic fibrosis is more than $300,000 per patient, and Duchenne's muscular dystrophy costs an average of $18,930 per patient a year (Gool et. al, 2003; "Muscular Dystrophy: Data and Statistics," n.d.). Adding in lost wages for those who are incapable of working as a result of their illness and the care is required for someone who is physically incapacitated, the cost of caring for those with debilitating diseases is significant not only monetarily but also in terms of the skilled labor that is required to provide the healthcare. Making PGD financially accessible, then--as well as preventing the incidence of such genetic diseases--is beneficial for insurance companies, who will likely have smaller medical claims. Additionally, reducing long-term or repeated hospitalization reduces the care required by trained healthcare workers, thus lightening the burden on healthcare system as well.

Suggested Guidelines for PGD

PGD has the capacity to seriously decrease the incidence of debilitating genetic diseases by allowing those who might previously have been dissuaded from having children to ensure that their offspring will not receive the harmful mutations that they themselves might have. For this reason, PGD should be treated with the same regard that other prenatal health measures are--that is, genetic carriers of disease should be obligated to use this technology, just as all prospective parents are currently expected to adopt lifestyle changes that minimize harm to their future children.

It is not enough that this option exists; those who stand to gain most from its use should feel morally compelled to seek it out should they decide to conceive using IVF. In order to make this happen, governmental health agencies should make information about PGD more widely available to encourage people to use it. Public health campaigns educating the public about the benefits of preimplantation genetic testing can additionally be implemented to dispense accurate material about the test, hopefully also dispelling many objections based on misinformation. Placing a greater public focus on the obligation parents have to prevent harm to their children even before birth will cultivate a greater acceptance and awareness for PGD. Additionally, more research funding

should be devoted to identifying more disease markers and improving the success rate of post-PGD implantation; doing so will not only increase the usefulness of PGD as a screening tool but also make IVF a much more realistic method for conceiving. Increasing success rates of implantation should also help decrease costs by hopefully reducing the number of IVF cycles necessary for pregnancy, thus making insurance coverage more plausible. Helping genetically at-risk parents recognize the necessity for such genetic screenings and making the test more accessible is essential to improve the health of their offspring and to prevent passing on genetic diseases to future generations.

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Identity, Existentialism, and Self-Reflection in Two Narratives

By Kiana Trippler

Both Bill Bryson's *I,n a Sunburned Country* and Reg Saner's "The Ideal Particle and the Great Unconformity" question what it means to be human, the first in the context of traveling through Australia and the second in hiking the Grand Canyon. Both narratives tackle the hefty task of examining humanity's fluctuating identity, and in doing so, offer insight to the nature in which humans come to understand themselves and the world. Existentialism provides an avenue with which to examine humanity's relative physical size in the world, giving humans the opportunity to examine the limits of their metaphysical identity. Via self-reflection, humanity attempts to find purpose in its role in the universe.

Bryson's narrative of Australia, which heavily focuses on the astonishing physical aspects of the country, attempts to define humanity's size in concrete, physical terms. While visiting Uluru, a majestic natural feat, Bryson describes that "it's not that Uluru is any bigger than you supposed or more perfectly formed. . . It is exactly what you expected it to be" (255). Bryson's understanding comes not from discovering that he is small but from reaffirming it. Bryson seems to highlight that humanity as a species is fully aware of its small, inconsequential nature, at least when directly presented with it, and that it can in fact find understanding of its identity through its relative place within the natural phenomena of earth. Almost modestly, Bryson suggests that visiting the rock only once, that coming to terms with one's size, "never could be enough" (258). As a species, humanity finds understanding through this physical comparison, but Bryson admits that, despite this starting point, one cannot fully understand one's inner, metaphysical identity through short encounters. He wishes to return in order to continue seeking a sense of his identity through comparison.

Whereas Bryson presents humanity as inherently aware of its smallness, Saner examines humanity's size peculiarities through the ideal particle, smaller than we can imagine, and the great unconformity, infinitely larger. Using science and religion as a means of explaining these grand sizes, humanity has tried to defend its place in the universe as a species. In his essay, Saner writes that, "in Dante's universe, if you traveled at what we know is the speed of light, you'd reach the nearest start in five minutes," an estimation that makes humans appear larger than they actually are (383). Saner points out how humans have not always realized the true scope of their universe--knowledge that has come alongside gradual developments in science and shifting trends in religion--and instead have fabricated humanity's apparent importance to validate its size and prove its existence. Humanity's sense of self therefore has become guided by the logical constraints of its scientific capabilities and the mental constraints of its religious understandings of the world. Saner goes so far to declare that, "after millennia of practice, I suppose our highest flight within that webworks called the mind has been to realize that's who we are: animals" (384). In relation to the universe's grandeur, humanity seems small in comparison, much like the animals that we often regard as inferior. Saner's point of view therefore suggests that how we have come to portray our idea of identity, whether that be through supposedly unshakeable science or dedicated religion, is inherently flawed. We have not come up with a singular argument to classify size and yet continue to use it to prove our own status. Humans are neither definitively small or big, so what does that make of us? No matter how far we travel, whether it is to another country or to the edge of the universe, humans struggle to find a set standard with which to regard its identity as a species.

Existentialism, therefore, becomes a tool with which to examine this issue of identity that such physical comparisons raise. Broadly defined, existentialism involves one's ability to find meaning in the world through free will and choice. Existentialism in the narratives proposes the idea of relativity--that one finds identity through actively relating oneself to one's surroundings. In an essay discussing contrasting views of existentialism, author John Rowan asks, "are we going to accept the line that existentialism is about relationality, or are we going to go instead for the line that existentialism is about personal choice and responsibility?" (308). Herein lies the question of whether one's identity comes solely from oneself and one's individuality or if one's identity is based on the comparisons against something else. In his essay, Saner discusses, while watching a river, how he doesn't "mind being alone, the views are stupendous, the evening serene. Who needs Homo sapiens?" (376). Despite spending so much of the essay discussing relativity and size on the species level, in this moment Saner seems to reject his own idea, that one finds identity through his total relative position to others. Even so, he does not proclaim some grand responsibility, aside from that of understanding the world

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through a more concrete, scientific lens. His personal will in this moment is to ignore others and find identity in solitude. But perhaps, rather than this being identity through sole will, it is still identity through relativity, only in the absolute negative. One must remember that "the river is a dozen or twenty times older than anything human" in order to realize that Saner chooses to evaluate humanity as it is compared with nature, in order to offer humanity an understanding through relativity (376). Size here becomes a representative and facet of one's identity and purpose, regardless of one's attempts at individualization, simply because there is no true isolation. Saner also remarks that the wind claims that "everything goes . . . nothing is final" (397). By comparing oneself to nature, by relating oneself to this infinite size, one finds both meaning and meaninglessness. Nothing is final or definite because it is in relation to another thing, and yet it becomes something definitive through this relation. Identity is not a personal choice in this sense but an acknowledgment of the grandiose nature of one's surroundings and one's relative position to his surroundings.

Despite his apparent self-isolation by the river, Saner in his journey is inexorably tied with the other hikers whom he observes and his own position in regards to the ideal particle and the great unconformity. On an individual level, he utilizes "the human body . . . as a microcosm of time," where different parts of the body represent different eras in earth's development, millions and billions of years ago (401). With this comparison, Saner serves to collapse the binary between the individual and his surroundings. He relates the physical world with one's mental identity, showing how humans can use the physical to understand the metaphysical aspects of themselves. In an article regarding human freedom and existentialism, author Mariam Thalos writes that "we experience . . . power in our physiological beings: we feel it. For instance, we can feel the natural elements' power over us--the sun, the wind, the storm, the instability of the ground in earthquake, the power of gravity. But we also feel the power of logic" (3). Humans are defined not simply by the surroundings that contain them and by the essence of humanity itself but by their power to be logical and enact change upon that world in response to this understanding. Self-reflection, therefore--and understanding the malleable nature of one's identity--is how people can use this understanding of their size and place in the universe. In theory, this source of positive progress towards a human's ultimate purpose seems possible. In practice, however, as both Saner and Bryson discuss, it is much more difficult.

Bryson discusses how Australians often remain isolated from the world, forgoing the use of relativity to enact self-reflection. Bryson quite bluntly remarks how "if Austra-

lians lack one thing in their lonely eminence Down Under, it is perspective" (128). In comparison to the rest of the world, Australia is either often forgotten or chooses to forget the rest of the world back. Their identity and purpose, therefore, have a limited scope and perspective, which, inside this bubble, appear fine because there exists no point of comparison. Perspective, therefore, is the defining feature in one's purpose and identity and points to the allure of disregarding size in one's self-analysis. In regards to a particularly brutal crocodile attack, Bryson jokes, "who gives a damn how much money people are making in Hong Kong or Singapore when you've got matters like that to worry about?" (130). In this instance, analyzing the country's identity in regards to the rest of the world seems excessively superfluous because survival of the individual and, in a great sense, survival of the isolated Australian species seem a more demanding concern. The purpose of one's grander species, therefore, becomes important only when the immediate situation does not offer a spectacle to analyze. In Australia's case, this is few and far between. "That is of course the thing about Australia," Bryson concludes, "that there is such a lot to find in it, but such a lot of it to find it in. You could never see the half of it" (303). Even within the country, there is little way of reconciling the many moving parts of society and its people. Therefore, relating oneself to the outside world is at the expense of energy and expanding one's perception to a grander social size only serve to muddy the waters further. Bryson, therefore, presents this apparent lack of self-reflection as a salvaging, yet limited, tradeoff Australia has made to define its own identity. It provides Australia with a functioning, albeit somewhat shaky, foundation that comes at the cost of losing an understanding of Australia's grander purpose in the world.

Even while contained within its own bubble, Australia struggles to account for the greater complexities of its multicultural identity. In his essay about the subject, Gillian Howie states that recognition of one's own identity is "a fruitful framework for engaging with a social analysis of moral and political life" and that "the failure of recognition is a feature of alienation" (55). In Bryson's narrative, Australia struggles with racial barriers between the wealthier, controlling whites and the Aboriginal peoples, the whole country thus failing to act upon an analysis of past moral and political turning points in its history. When Bryson goes to Myall Creek to learn more about a historical massacre, he is greeted with confusion and indifference. He speaks with someone who studied the massacre, who says "we knew [the massacre] had happened . . . but that was about it" (194). Despite the incident at Myall Creek being so momentous--it was the first harmful event brought upon the Aborigines that resulted in white punishment--white Australians fail to utilize this turning point as an instigator for further change on the communal and

individual levels. In failing to recognize the greater, forward impact that their history can have, white Australians effectively erase and minimize this aspect of their nationwide, united cultural identity. They choose not to reflect upon their society through a lens of diversity but suffocate it through indifference. Therefore, Bryson suggests that Australia has made attempts at self-reflection but that they continue to alienate themselves from truly exploring their purpose in this realm of social conflict. In spite of this alienation, Howie raises a question about this determination of one's identity through recognition of its scale and depth. She writes that "existentialist phenomenology . . . is thus able to offer insight into the conditions of experience that allow for the critical dissolution of illusion and alter habitual harmful behaviours which, with practice, could prompt a radical conversion" (57). In struggling to find one's identity and purpose, one must come to question it thoroughly for the goals of self-betterment and the destruction of harmful delusions. In the case of white Australians, in dismissing this historical opportunity for self-reflection, they fail to produce their own "radical conversion." They limit the scope of their own identity and, in doing so, damage any opportunity to develop an upwardly constructive purpose.

Saner's essay describes a multitude of clueless and ill-prepared hikers, but one such hiker presents the impact of more successful self-reflection on the individual level. Saner notes that this hiker, a struggling man with blistered feet, does not care about classifying the rocks around him in the canyon but "simply wants them to take the measure of his character" (371). At first glance, he seems ignorant of his true inability, but upon closer examination, one finds that, unlike the Australians at Myall Creek, this lonely hiker is in fact making great progress in using his physical world to define his identity. After pouring alcohol on his painful blisters and howling, he claims, "'I thought I was ready for that . . . but I guess I wasn't'" (372). Herein lies the evidence of self-reflection. In coming back year after year, this hiker attempts to test his mettle against the physical world. In this moment, he realizes that he is not prepared enough to successfully navigate the canyon. It is not this failure that defines him but his self-acknowledgment of the failure, and his continued attempts at resolving it. At Myall Creek, the murder of whites presented a past acknowledgement of failure, but the hiker takes this a step further in continuing a quest of self-betterment that Myall Creek fails to undertake. He continuously self-reflects and realizes his own shortcomings and, in doing so, allows himself to further realize his individual character and possible purpose. His revelation is on the individual level, unlike Bryson's societal or even species level, but provides the foundation for humanity's greater forward progress. Like the ideal particle, which can change entire landscapes despite its

small size, the individual is a valid and commanding aspect of humanity as a greater species because he can enact change from a comparatively atomic level.

Despite this apparent drive toward success, humanity continues to evolve in thought and ability, questioning if it will ever truly find a purpose at the grander species level. In the face of this apparent inability, humanity must conform its world to a size comparison at which it understands its existence. Saner seems to subtly criticize this falsifying of our relativity, claiming that "when it came to the scale of this actual universe, our forefathers had no idea . . . or chose not to, like everyone" (383). Even though here Saner is referring to archaic definitions of the universe's size, his and Bryson's narratives seem to suggest that while our science, religion, and understanding of society and the self have evolved, humanity has not. On a species or even community level, humanity is not proficient enough in self-reflection to progress toward a grander purpose, as seen with Australia's struggles. On an individual level, however, humans have come to self-reflect with the intention of finding purpose, even if it does not completely work out, as seen with Saner's blistered hiker. While humanity struggles with defining itself, the truth lies in geology and the individual's metaphysical connection to this physical presence. The ideal particle presents humans as large on the physical scale, and the great unconformity presents them as miniscule. To argue over a finite definition is therefore to forget the vast infinity of the universe. Saner continues, "no sooner are certain realities admitted to the brain than something within us secretly dissolves them, just as, day by day, the mind takes back what it dreamed" (383). Ultimately, humanity chooses to forget what it knows about its size in order to find a sort of limited purpose in its existence. Humans restrict what they know to a relative field, in order to find purpose in what they can define. Saner points out that, regardless of these intentions, there is always more to compare, that humanity always craves to define the indefinable. The individual attempts to take in the full picture where he is unable, and the society ignores the full picture to succeed in its own bubble. Self-reflection, therefore, is an evolving art.

Returning once more to Uluru, the rock that led Bryson to realizing his own minuscule stature, one sees the true capabilities of the physical in discerning a metaphysical analysis of oneself. Bryson writes almost wistfully that, at Uluru, "you feel certain that this large, brooding, hypnotic presence has an importance to you at a species level--perhaps even at a sort of tadpole level--and that in some way your visit here is more than happenstance" (256). This wistful, emotive description of what amounts to a very large rock presents finality to the idea of self-reflection. There may be a

grander purpose on the societal or individual level for humans, but at the end of the day, we can only suspect that there is more because we have met little success in finding "more" over time. Ultimately, this enhanced understanding of one's identity, and the strive towards self-reflection and purposefulness, amounts from the absence of a solid reference point. Humanity will continue, like Bryson, to define this sense of self and purpose and to strive toward some sort of solid reference point or semblance of understanding, but our range is limited, and so our musings become romantic and uncertain.

Inevitably, humanity struggles to determine a metaphysical identity for itself on the species and individual levels, through a comparison of its physical size with the world. In doing so, humans find an opportunity for self-reflection, one that, if properly utilized, may guide us forward to a greater purpose. The real question therefore becomes whether there a limit to our self-reflection. Will our musings ever distinguish the absolute, definite greater purpose for humans in the universe? As the years go by, we continue to ask ourselves these questions. Perhaps, somewhere amidst the outback, or a great canyon, or a small particle, we might finally find a "right" answer.

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Fracking and Investing:
Understanding and Investing in Hydraulic Fracturing for Individual Investors
By Jamie Emerson

Summary

The purpose of this paper has three key elements.

- First, we seek to inform our individual investors about the process of hydraulic fracturing. Hydraulic fracturing, or "fracking" is a relatively new technology developed by the oil and gas industry that has received significant attention in the news media.
- Second, we aim to provide a clear understanding of the economic effects hydraulic fracturing has on the economy, both nationally and locally here in Colorado. Fracking has become an incredible source of economic growth since its widespread adoption by energy companies around the U.S.

And finally and most importantly, we state our position, which is that Trillium Asset Management opposes investments in hydraulic fracturing because of environmental, financial, and health reasons. We shall provide considerable evidence to demonstrate how investments in the fracking industry do not fit our mission, and why the risk of such investments ultimately outweighs the rewards.

What is Fracking?

Let's begin with a definition. Hydraulic fracturing, or "fracking" as it is known colloquially, is a process by which energy companies extract oil and/or natural gas out of the ground.[9] Oil and natural gas are deposited in shale formations that underlie much of the United States. Previously, the oil and natural gas found in these deposits had been difficult to access, but with today's modern fracking techniques, it is possible. Fracking began as an experimental technique in 1947, and 1950 saw the first successful commercial implementation of the technique.[8] More recently, improvements in fracking technology have opened the doors to new areas of exploration. This, in addition to a dramatic increase in the price of oil, has made fracking very economically viable.

Hydraulic Fracturing in eastern Colorado. Source: (12) Sandoval, M. (2014). Anti-Fracking.

Where do Firms Frack?

Fracking is done across many locations in the U.S., but there are three current shale deposits of note: The Eagle Ford, the Marcellus and the Bakken formation. The Eagle Ford is in Texas, the Marcellus is in the Eastern U.S., underneath New York, Pennsylvania and West Virginia. Perhaps the most well-known formation is the Bakken, in north west North Dakota, near the town of Williston.[15]

Experienced geologists work tirelessly to find potential shale formations like those listed above. They use many different techniques to locate these formations. They may study surface rocks and structures with advanced satellite imagery. Or perhaps use sensitive machines that measure small changes in the Earth's gravitational field. These changes can alert the scientists to oil flowing underground. The most common technique used is to create shock waves that bounce off the rock and back to the surface.

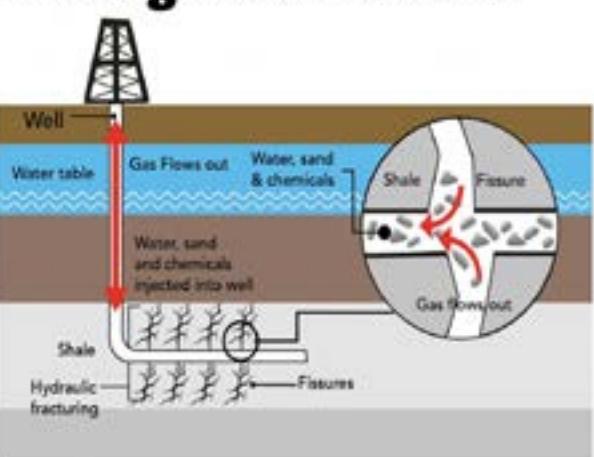Source: (15) U.S. Energy Administration. (2011).

How Does Fracking Work?

To understand specifically how the process of fracking works, let's look at one well in the Bakken formation in particular. Fracking began here in 2006, and there are currently more than 8,000 wells in operation in this region.[9] The Iverson, for example, provides a great example of typical fracking well. This well was first drilled in 2010.[9] In general, a well is drilled down into the earth nearly 2 miles to the shale formation.[9] Cement and steel casing are inserted to prevent leaks into the groundwater.[9] When the well finally reaches the formation, it bends horizontally, traveling through a layer of sandstone, which is surrounded by layers of shale.[9]

Then plastic balls are forced through the well, which open sleeves in the pipes to expose holes.[9] Fracking fluid, which is a mixture of water, silica and toxic chemicals, is pumped under extremely high pressure down the length of the pipe.[9] The fluid is then forced out through the holes in the pipe and fractures the rock.[9] Once the rock has been fractured, oil or natural gas will flow up through the pipe, along with the used up fracking fluid. Some of the fracking fluid is recycled, but most of it is pumped back into disposal wells in the earth (and away from the well) which are located deep below the groundwater.[9]

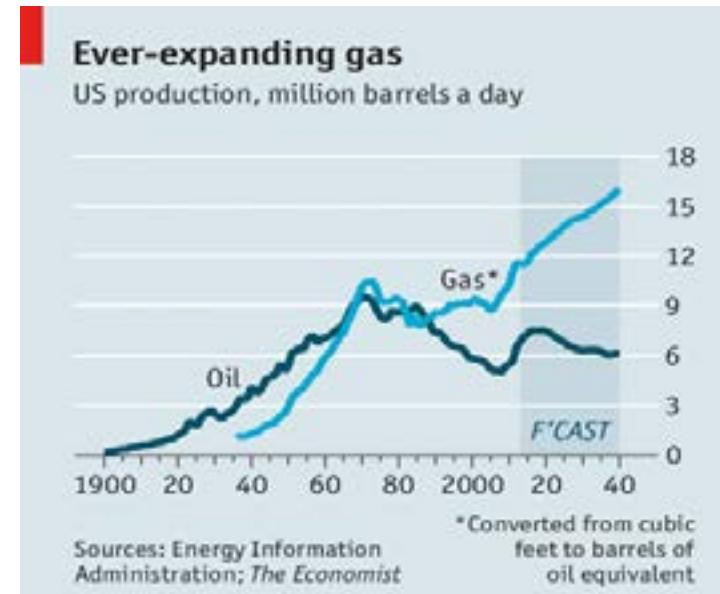Below is a diagram that depicts the process:

Source: (7) How Hydraulic Fracturing Works. (2011).

The Economics of Fracking

There are a number of economic benefits to both the U.S. and the Colorado economy. Not only has fracking helped to dramatically increase the GDP of both, it has decreased U.S. dependence on foreign oil, increased wages, and decreased overall costs to the energy consumer by billions of dollars. In 2015, the U. S. consumed 7.08B barrels of petroleum products, which averages out to about 19.4 million barrels of oil a day.[16] Fracking accounted for 4.6 million of that total.[15] Fracking has seen a dramatic increase in the total percentage of oil production. In the year 2000, fracking accounted for 2% of the total U.S. output of oil. Today that share has risen to 49% of the total U.S. output of oil.[16] There have been a number of economic benefits due to this dramatic increase. According to a study published by the Brookings Institute, between 2007-2013, consumer gas bills dropped by a total of $13B.[3] This adds up to about $200 a year for individual consumers.[3] In total, energy consumers saw economic gains of $74B from the increase in fracking.[3] There are currently over 300,000 wells in production and the oil and gas industry employs over 200,000 workers in the U.S., which represents a 67% increase since 2003.[15] There is an estimated $100B per year benefit to the economy from fracking.[15] Here in Colorado, fracking has benefitted the economy in three key ways. First of all, it has created 102,000 jobs, 38,650 of which had annual wages greater than $105,000.[12] That figure is twice that of all industries in Colorado and all private industries in Colorado in 2014.[12] The industry on a

whole has a production value of $15.8B and the total economic impact on Colorado in 2015 was close to $32B, with $7B in total compensation to workers.[12] It is hard to deny that there have been tremendous benefits to consumers, laborers, and the economy as a whole both nationally and here in Colorado due to fracking. The fracking boom has fueled tremendous economic growth, helping the U.S. reach towards oil independence and placing Colorado in the top 5 growing economies in the country.[13]

Source: (4) The Economist. (2016, November)

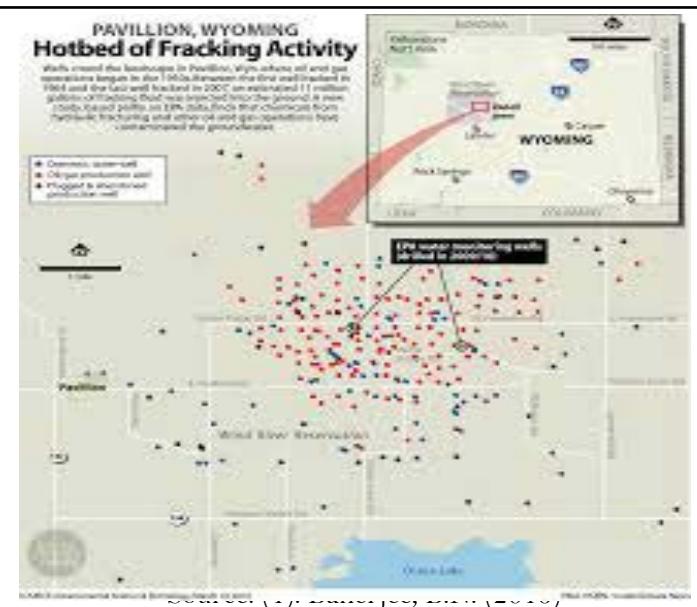### Opposition to Fracking Investments: Three Key Reasons

Trillium Asset Management is opposed to investing in fracking for three key reasons: Environmental, financial and health. While there are many economic positives that have come from the development of fracking technology, it is our belief that ultimately the risks outweigh the rewards. Such investments do not fit with our mission statement: to work with individual investors to produce a well-diversified investment portfolio, with environmental and social impact. Each issue will be addressed in depth, to provide a clear picture of the significant negative costs and risks associated with companies that participate in hydraulic fracturing.

Environmental Concerns

There are a number of ways in which fracking is detrimental to the environment. First are the negative measured effects fracking operations have on air quality. Each fracking well requires between 320-1365 diesel trucks to provide transportation for the water, silica, chemicals and machinery needed to sustain the well.[14] The pollution from the combustion engines of these trucks and heavy machinery is substantial. The National Institute for Occupational Safety and Health (NIOSH) found that there was a concerning level of diesel particulate matter in the air around 11 fracking sites in North Dakota, Pennsylvania and Texas, including the Bakken, Marcellus and Eagle Ford shale regions.[14] Another source of air pollution are volatile organic compounds (VOCs).[14] In areas of Utah, tight wells (those that require massive fracking to produce gas) produced the equivalent VOC level as 100 million cars.[14] Additionally, hydrogen sulfide (H2S), which is a gas that is toxic to the human nervous system, is produced in association with oil and gas may be found in surrounding communities[14] Finally, the increase in fracking produced oil and natural gas has led to a dramatic spike in the production of unhealthy levels of ozone in rural areas.[14] In places like Sublette County, WY, increases in concentrations of ozone were linked to increases in outpatient visits for respiratory issues.[1]
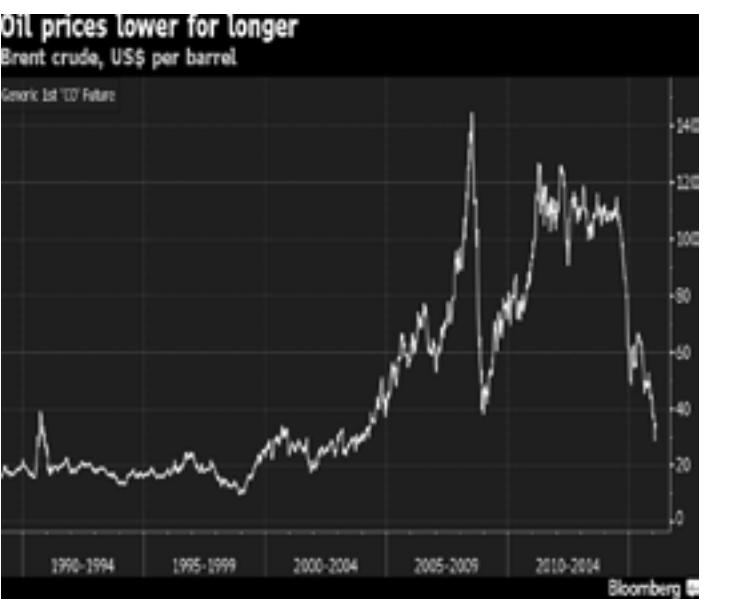
Degradation of water quality in and around fracking wells is also of significant concern. In 2016, a landmark study published by Stanford scientist Dominic Digiulio demonstrated that because 11 million gallons of fracking fluid had been pumped into, or near, the ground water around Pavillion, WY, those groundwater sources had become polluted with dangerous and toxic chemicals.[1]

Source: (2). Bloomberg. (2016)

The Federal Agency for Toxic Substances and Disease Registry made significant recommendations, suggesting that residents avoid bathing, cooking or drinking water from their taps.[1] Often the fracking companies are exempt from regulations requiring them to dispose of their fracking fluid and waste water in the safest possible manner, as was the case here.[1]

Financial Concerns

There are also significant financial concerns and risks that come with investments in the firms that participate in fracking. Since 2015, the price of WTI crude oil has collapsed, ropping from a high of around $120 a barrel in 2010 to a current price of $44.5 Long term economic forecasts do not suggest that oil will rebound in the near future. This crash in the price has made it extremely difficult for oil companies to turn a profit. Fracking is an expensive process, and many of these companies, assuming the higher price of oil, were highly leveraged. This debt is untenable at the current price of oil, and as such 77 of these companies have gone bankrupt since 2015.[5] And many more companies (up to 175) are on the brink of collapse as well. In total, $26B of this outstanding debt has been defaulted upon due to the drop in the price of oil.[5] Billionaire hedge fund investor David Einhorn, the founder of Greenlight Capital Management, had this to say about investments in fracking, "These fracking companies have negative development economics, meaning that aside from a few choice locations, they don't earn a positive return on capital, but have a nearly infinite supply of negative return opportunities."[5] We agree wholeheartedly with Mr. Einhorn's assessment.

Health Concerns

Lastly, there are significant health concerns to human beings in regards to the fracking industry. A number of studies have been done verifying these health concerns for those that live near fracking wells and for those that work for the fracking industry.
In a study in Colorado, it was found that mothers that lived near oil and gas wells were 30% more likely to have babies with heart defects.[14]

A further study concluded that there were additional and significant increases in the risk of many chronic and sub chronic effects, like dizziness, shortness of breath, seizures and chest pain, for those that lived near fracking well sites.[14] And private citizens are not the only ones affected by these operations. Workers involved directly with the industry were also affected. Research found that the silica particles used in the fracking fluid can become embedded in the lungs of workers, which can cause a serious disease called silicosis. There are many sources of respirable crystalline silica during hydraulic fracturing, including on site vehicle traffic, agitated blender hoppers or transfer belts, or ejection from thief hatches. Silicosis is currently incurable.[11] There were 1300 hundred deaths in the oil and gas industry between 2003-2014.[11] This is 2.5 times the rate of similar jobs such as construction work, and it is 8 times the rate when compared to industrial work overall.[11]

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Source: (5) Greenfieldboyce, N. (2013)

The Future of Investments in Hydraulic Fracturing

The energy industry is one of the most complex and volatile sectors of the market. We are cur-rently at the cusp of great changes in how and where humans acquire our energy resources. Solar and wind power stand poised to lead us well into the 21st century. Hydraulic fracturing has no place in our current or future diversified, socially, and environmentally sound investment portfo-lios. There are three big concerns we see as potential risky downsides to such an investment. As environmental concerns become more prevalent it is imperative that we remain aware of the po-tential negative associated externalities. As solar and wind power become more prevalent, oil companies will struggle for market share, and we anticipate the price of WTI crude to swing wildly. And finally, the health of all people depends on our ability to remove ourselves from the dependence of oil towards cleaner alternatives.

Why Trillium?

Trillium Asset Management is a forward thinking investment firm. We work with individual investors, with environmental and social impact, to produce well diversified investment portfolios. We offer:

- Expert and comprehensive financial insight
- Global and local investment solutions
- Intelligent and thoughtful portfolio analytics

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This article brings to light and summarizes the key findings from a groundwater study near Pavillion, WY. It also highlights findings from a 2011 EPA study from the same area that had a drastically different conclusion. It's implied that the new study, which is not government influenced has more accurate results (that the groundwater in the area is contaminated with chemicals fracking fluid).

2. Bloomberg. (2016). Retrieved from https://www.bloomberg.com/quote/CL1:COM

This is a chart of WTI Crude Oil from before 1990 until the present, showing the dramatic recent decline of the price of WTI Crude Oil.

3. Dews, F., Brookings Institute. (2015, March 23). The Economic Benefits of Fracking. Retrieved from: https://www.brookings.edu/blog/brookings-now/2015/03/23/the-economic-benefits-of-fracking/

This article details some of the specific economic benefits from the U.S. fracking revolutions. Most significantly, consumer gas bills dropped $13B between 2007-2013 as a result of fracking.

4. *Economist.* (2016, November 16). From Sunset to New Dawn. Retrieved from http://www.economist.com/news/business/21589870-capitalists-not-just-greens-are-now-questioning-how-significant-benefits-shale-gas-and

This article contained a great graphic showing the ever-expanding gas production in the U.S. from 1900-2016 and projects beyond to 2040.

5. Einhorn, D., Greenlight Capital. (2015, May 4). The Mother-frackers. [PowerPoint Slides]. Retrieved from: https://www.greenlightcapital.com/926698.pdf

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This article summarizes some of the risks associated with the use of silica in fracking fluid. The silica was so prevalent that even the masks of the workers failed to stop all of it from getting into their lungs, where it can cause silicosis.

7. How Hydraulic Fracturing Works. (2011). Retrieved on January 23, 2015 from http://onlyinamericablogging.blogspot.com/2011/06/theyre-fracking-in-my-back yard.html

This article contained a nice and simple illustration of the fracking process, showing the sideways well, the injecting fracking fluid, and the breaking or fracturing of the rock, which allows for the oil and natural gas to flow out and back up the pipe.

8. Manfreda, J. (2015). The Real History of Fracking.Retrieved from http://oilprice.com/Energy/Crude-Oil.The-History-Of-Fracking.html

This article provided some history as to when fracking first began, and how it came into prominence as a major technology used to extract oil and gas out of the ground that was previously unattainable.

9 *National Geographic.* (2013, Feb 13), What is Fracking? National Geographic. [Video File]. Retrieved from: https://www.youtube.com/watch?v=6qKadxyMOYY.

A clear and concise explanation from the National Geographic about how the process of fracking works. This video details the Iverson Well, which is in the Bakken oil field of North Dakota. It goes through the process of horizontal drilling, the use of the fracking fluid, the fracturing of the rock, the extracting of the natural resources desired, and the disposal of the waste water and fracking fluid.

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This article gives some basic but specific statistics on the economic benefits fracking has had on North Dakota, including that each well generates about $20 million in profit, and that North Dakota's economy has grown by 600% since 2005.

11. Sagosti, R.J., (2016). Drilling Through Danger. Denver Post.

This article tells, through the perspective of several workers, tche danger that exists in working with the fracking industry in Colorado. It gives specific data that 51 people were killed in the industry from 2003-2014, which is considerably higher that other death rates in similar industrial type lines of work. It also insinuates that the fracking companies have tried to cover up or muddle the data to make the work look safer than it is.

AT & T Transparency: Creating a Better Tomorrow

By Trace Grain and Robert Seber

To: Board of Directors at AT&T

From: Trace Grain and Rober Seber

Subject: Recommendation Report

Enclosed please find details pertaining to our recommendation for AT&T to improve customer satisfaction. In the report we recommend that AT&T increase transparency as well as improve on procedures involving the collection of data by third parties such as government agencies like the NSA.

Exceutive Summary

Since 2001, AT&T has been assisting the NSA in the surveillance of U.S. and foreign citizens. This has hindered business in the foreign markets and caused our company to seem less trustworthy in the public eye. The causes for the spying was largely due to the tragic terror attacks on 9/11. Soon after the events of 9/11, the NSA began to monitor international calls to and from the U.S., which was revealed in 2006. However, in 2013 the leak by Edward Snowden revealed that this was happening to nearly every call in the U.S., domestic or otherwise, leading to a devastating blow to our image in the eyes of the U.S. public. Our goal is to improve the image of AT&T among foreign and U.S. citizens. This can be achieved in a few ways.

Moving our servers offshore will reassure foreign customers that the NSA cannot secretly gain access to their information. This would be following in the footsteps of other U.S. tech giants. Removing NSA surveillance centers from our domestic servers is also recommended, this pertains to the controversy over Room 641A, which was a data center built by the NSA in our San Francisco offices and lead to the initial leak that we were collecting data for the NSA. If we update the privacy policy this will alert our customers of exactly what information that they are submitting to AT&T, leading to more trust among current and future customers. We as a company should disclose more detailed information in our transparency report to reassure our stakeholders of our position on being a more transparent company. By requiring a warrant for the collection of data, we would alert customers if their data being used for investigation. Doing so aligns more with the Fourth Amendment. By following these recommendations, we can increase business in foreign markets and improve our image among U.S. citizens.

There will of course be some costs involved with moving servers offshore, but we do not project the costs of the other changes we are recommending to be large, and the overall costs involved are miniscule compared to our yearly operating costs. We expect the total costs of all recommendations to be ~$700 million, but this is dependent largely on if all recommendations are followed, how quickly they are enacted, and the scale at which the changes are made.

We urge you, the Board, to vote yes to each of these recommendations we have set forth, in the interest of protecting American values such as a right to privacy.

Description of the problem

Since 2001, AT&T has been assisting the NSA in the (often) warrantless collection of customer data. This is a problem for the company because it has led to a loss of business in the foreign markets, and the trust of customers in the U.S. market (Louis, 2015). Shareholders of AT&T stock have asked the company to be more transparent with them about the involvement with the NSA and the collection of data by the NSA, but we have refused this request (Gustin, 2013). This puts us in an uncomfortable position because our shareholders in essence own our company. So refusing them is refusing our owners of a change in corporate culture.

A recent report offered by The Electronic Frontier Foundation "ranked 24 companies according to factors that included how they tell their customers about government requests for information, how they protect their network with steps like encryption and how transparent they are about the data they keep… The top telecoms in the U.S. got the lowest scores, with Verizon receiving two out of five stars. Because of insufficient data on one category, AT&T only received one star" (Risen, 2015). Our public image cannot afford rankings like this. Receiving only one star in this reports reinforces the fact that we need to make changes in order to have a better public image. There are of course reasons to why these programs are in place.

Part of the reason for the warrantless collection of data was due to the 9/11 attacks in 2001 (McCutcheon, 2013). The government, the NSA specifically, has been worried about threats from terrorists because of this event. They have been making adjustments to national security by using data collected by telecom giants like us, and Verizon, to make preemptive strikes against terrorists. There are pros and cons to this situation. One of the pros for our partnership is we are aiding our government protecting U.S. citizens. For example, in 2009 the NSA was able to thwart an attack by a terror cell in New York City. The group was attempting to set off an explosive in a New York City subway station. The NSA was able to find out about this by tracking the bombers' email conversations with an Al-Qaeda handler who was giving them instructions on how to carry out the attacks in both New York City and London. Although the government was able to prevent attacks such as the attempted subway bombing, there are still millions of innocents who are being spied on. Additionally, many other factors led to the terrorists being apprehended, and one cannot attribute the prevention of this attack solely to the NSA. This is a bad policy for our country because it goes against the ideals of freedom and privacy the U.S. was founded upon.

The NSA has installed data collection centers at numerous AT&T server locations to collect information about our customers, and for many years this was a secret. However, since 2006 the public has known about these NSA run data centers, leading to less trust among our stakeholders. "The regular AT&T workforce was not allowed in the SG3 Secure room… only employees cleared by the NSA were permitted to enter the SG3 Secure room. To gain entry to the SG3 Secure Room required both a physical key for the cylinder lock and a combination code number to be entered into an electronic keypad on the door" (EFF, 2007). Room 641A is synonymous with SG3 Secure Room. Stakeholders, specifically the employees who were working near the room, did not even know what was going on in the room. Only after Mark Klein discovered what the NSA was doing with a private room in AT&T were the stakeholders able to find out what was going on. In this room, the NSA used splitter equipment to connect to AT&T's fiber optic cables, and this gave the NSA "the content of all of the electronic voice and data communications… from the WorldNet Internet room's fiber optical circuits into the SG3 Secure Room". There are numerous centers that mimic Room 641A in many of our other server hubs across the U.S. (EFF, 2007).

Additionally, the AT&T privacy policy specifically states "we will not sell your personal information to anyone, for any purpose. Period" (AT&T, 2016). However, there are numerous reports since the Edward Snowden leak detailing the receiving payment for the sharing of data. Forbes magazine wrote, "... [the] NSA pays the telcos roughly $300 million annually for access to information on their communications; where and when they occurred, the identity of the person called and how long the conversation lasted" (Lenzner, 2013). While this report is dated compared to the privacy policy, the sharing of this kind of data must end immediately, especially if AT&T is being compensated for it because it is in direct violation of the privacy policy each of our customers agrees on.

Although it is in the best interest of our nation's security, we feel that the partnership between the NSA and telecom giants violates U.S. citizen's Fourth Amendment, which protects a U.S. citizen from unreasonable searches and seizures. The partnership that we have with the NSA has also led to a loss of trust among foreign customers, who have fears that their private information will be turned over to the U.S. government, which can cause massive amounts of customers to give their business to overseas competitors.

Recommendations for the Future

We Trace Grain and Robert Seber, Public Relations Managers for AT&T's Rocky   Mountain Region, recom-

mend that AT&T do the following:

- Provide a more detailed transparency report to all stakeholders

  - The transparency reports that we put out do not disclose nearly enough data to stakeholders regarding our involvement with third party entities (AT&T, 2015). We as a company should disclose more detailed information in our transparency report to reassure our stakeholders of our position on being a more transparent company.

- Update the privacy policy and alert all customers of the update

  - If we update the privacy policy this will alert our customers of exactly what information that they are submitting to AT&T. Our privacy policy is outdated, an update would reassure our customers of our commitment to their satisfaction (AT&T, 2015)

- Remove NSA run data collection centers from our servers

  - This pertains to the controversy over Room 641A, which was a data center built by the NSA in our San Francisco offices. The initial finding that AT&T was collecting customer data came from a former AT&T technician, Mark Klein, who worked around Room 641A. There are reports that centers like these are installed in other major AT&T server hubs, such as Seattle and LA (EFF, 2007).

- Require a warrant for all requests of data for investigative purposes

  - By requiring a warrant for the collection of data this will alert customers of the data being used for investigation. Doing so aligns more with the Fourth Amendment.

- Provide more servers offshore

  - Moving our servers offshore will reassure foreign customers that the NSA cannot secretly gain access to their information. This would be

following in the footsteps of tech giants such as IBM, which have recently been building data centers in London, Hong Kong, and Sydney (Cain Miller, 2014).

Cost-Benefit Analysis

The cost of our recommendations could be a miniscule amount in respect to how much revenue we generated last year, which was $146.8 billion. The costs are as follows:

- The cost of providing a more detailed transparency report would be negligible. It would only require that AT&T employees work longer on producing the transparency report. The estimate cost would probably be around a couple thousand dollars depending on how many employees are working on the report. The benefit to producing a more detailed transparency report would be improving customer satisfaction with our transparency, and increasing the trust among stakeholders.

- The cost of update the privacy policy would be very cheap in comparison to our other recommendations. The only costs to update the privacy policy would be the cost to hire a programmer to update the website, the cost of hiring a lawyer to rewrite the policy, as well as paying the salaries of AT&T employees that are in charge of the privacy policy. We estimate these costs to be between $3000-$7000. The benefits of this would not be direct either, but an updated privacy policy would greatly reassure our stakeholders. Reassurance of our stakeholders is essential in improving our public image. As Public Relationship Managers we believe that keeping our stakeholders happy is the most important objective. As a company we need to let our stakeholders know that we are making efforts to improve.

- Removing the data collection centers in the AT&T server rooms would be very costly, but since the equipment in these centers is owned by the NSA, and they were initially constructed by the NSA, much of the costs would fall on them. We would have to pay over-time to the employees who would have to adapt to these centers being removed. We estimate these costs to be small, less than $50,000. The benefits of this would be a renewed trust in AT&T by those that had negative thoughts from the discovery of the data collection centers. We expect an increase in customers and trust as a result of removing the data collection centers at various locations of AT&T offices in the U.S.

- We estimate the costs of requiring a warrant for every request to be expensive, but these costs would be shared among the NSA and AT&T. There would be the need for a lawyer to review many of these warrants, but we hope the cost of this will decrease over time as less requests for data come to us (assuming the NSA has to pay for each). The costs of these lawyers would be between $200-$400 million. There are no direct benefits of this, but this will increase customer satisfaction, as well as increase transparency with our stakeholders, which we prefer to prioritize.

- Providing offshore servers would be the most expensive recommendation on our list. For a comparison in the costs of building offshore servers, IBM spent $1.2 billion on building 15 new servers across the globe (Cain Miller, 2014). This is an insignificant amount compared to what we would expect to gain in foreign markets if we decide to build offshore servers. Additionally, AT&T would most likely not require 15 servers built world-wide, we would only build servers in locations where we are trying to expand the company, such as Mexico and Europe. We estimate the cost of building 3 offshore server sites to be $240 million. The estimated benefits of moving servers offshore would be an increase of $30 billion, as we would see a large increase in customers in areas we are currently operating. Also, the probability of merging or acquiring foreign telecom companies would greatly increase, allowing access to the customers of those companies.

Conclusion

The changes to AT&T would not be very hard to enact, and they would see huge benefits. These changes will see an increase in the satisfaction of our stakeholders and sales in the foreign (and potentially domestic) markets. In order to measure this, we could send out a survey to ask our customers and subsidiaries how they would react to the changes. We could also ask our employees to fill out a balanced scorecard to send to management about how they feel about the changes as well. This would include key performances indicators such as financial ratios, and how much of their budgets were used, more specifically, how the changes helped improve or harm their budgets.

We believe that it is necessary to proceed with the solutions that we recommended. It would be in the best interest of the company if the Board of Directors were to vote on each recommendation. This would help us decide which recommendations are the most important to the board and

which ones we can actually proceed with. As Public Relations Managers here at AT&T, we highly recommend implementing some if not all of these changes into the company. Thank you for your time, we look forward to seeing these changes within the company.

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The Feasibility of Investment in Seabin

By Philippe Langlois

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Executive Summary

The following paper addresses the feasibility of investment in the product Seabin, an eco friendly prototype aimed at eliminating waste in oceans. Creators Andrew Turton and Ceglinski launched an Indiegogo campaign to raise funds for production costs of the Seabin, and are going to need a new round of investors as they begin the marketing and selling phase. I have outlined advantages and drawbacks of the product that can be determining factors in its potential success in the market. The main argument that I have constructed is that the Seabin has the technology to stand out in the market, but without major changes to its marketing and versatility, will not be able to reach profit maximization. For this reason, I have labeled the Seabin as a risky investment until several changes are made by Turton and Ceglinski. The significant findings of this report are listed below, along with recommendations for the two to address before investment can be considered.

Significant Findings

- Turton and Ceglinski have not revealed much of their marketing mix. While some secrecy is important in order to prevent entirely revealing business strategies, the fact remains that investors know too little of the future plans that the creators have to market Seabin.

- There is no evidence that suggests that Turton and Ceglinski's current target segment has any demand for the product. Further research must be done in order to minimize risk and discover potential demand in other segments.

- The current model of Seabin lacks versatility; it is not large and is not mobile. If Turton and Ceglinski do not create multiple models, they will not be able to successfully market to potential segments that differ in demand.

- Seabin has the potential to expand into several markets, like personal pool use and governmental use.

- The technology in Seabin is effective and can be modified in order to have a competitive advantage in multiple markets.

- Competition in the market does exist, as products such as Ocean Cleanup also aim to effectively clean the oceans starting as early as 2016. Seabin will have to expand its capabilities in order to maintain a competitive advantage.

Recommendations

- A basic marketing plan must be released to ensure investors that Turton and Ceglinski have a general plan of how they are going to market their product.

- Money must be invested into marketing research in order to prevent Seabin from failing in markets that don't have demand.

- There needs to be more models with varying capabilities for the Seabin in order to successfully meet the demands of the different segments they can market to.

Introduction

In December 2015, Andrew Turton and Peter Ceglinski launched a campaign on the Indiegogo website for their invention, Seabin. The two surfers designed the product as a means to eliminate waste and filter ocean water to improve marine life and clean recreational water environments. In order to quickly gain attention, Turton and Ceglinski made a YouTube video that went viral for their campaign. Turton and Ceglinski were able to collect $270,000 from investors for the initial startup, surpassing their estimated necessary amount needed by $20,000. As the two transition from the production phase to marketing and distributing the Seabin, they will clearly need a second wave of investors to fund the costs. However, Turton and Ceglinski have yet to address several ambiguities regarding their marketing plan and versatility in other markets, and investment should not be considered until these issues have subsided.

As of right now, the two have revealed nothing concerning the marketing plan aside from the target segment that Turton and Ceglinski have selected. This gives investors no insight into how the two plan on actually selling their product once it is done with the production phase, which is a huge cause for concern. Also, there is little explanation as to why the segment selected consisted of marinas, private pontoons, residential lakes, water ways, and ports and yacht clubs. The risk of investment is exponentially increased without marketing research to determine demand in segments, and the lack of evidence presented by Turton and Ceglinski needs to be addressed. While the Seabin has technology that is far superior than its nearest competition, its lack of versatility restricts it in the market. For there to be any chance of Seabin reaching its full potential for profit maximization, it must expand its capabilities to meet the demand of different segments. If Turton and Ceglinski cannot successfully address the problems that currently exist with their plan for the Seabin, profit maximization is impossible to achieve and

investment would be a costly mistake.

Product Description

The Seabin prototype with creators Turton and Ceglinski (Scuttlebutt)

The Seabin is a trashcan sized device that floats at the water's surface and is capable at operating at all hours of the day. It has a pump that is able to start the flow of water in the area close to it, catching any waste within in its trash pod and then filtering the clean water out. The technology allows the Seabin to successfully catch any debris, oil, fuel, or detergent trapped in the water's surface in nearby proximity (Mok). In order to make the product as eco-friendly as possible, Turton and Ceglinski also produce the Seabin using mainly recycled plastic material. The Seabin as it stands only has one prototype; an immobile unit that is fairly small. According to Turton in the Seabin Indiegogo launch video, the targeted segment of marinas, ports, and yacht clubs are a great segment for the product because they "have no ocean storms," meaning that violent storms that impact water in the central areas of the ocean do not carry over to the shores of the marinas, ports, and yacht clubs ("The Seabin Project"). Turton and Ceglinski mention in their video that this location is also ideal because of the fact that waste washes to the shores, putting Seabin directly in its path.

Assessment of the Marketing Plan

- **Current Situation:** There is none. Turton and Ceglinski have yet to address what they plan to do in the Seabin's next phase.

- **Problem:** Without any knowledge of how the two plan to structure the marketing of their product, investors have every right to be skeptical that Turton and Ceglinski have done their homework and developed a strategy to effectively market Seabin.

- **Recommendations:** Turton and Ceglinski must publish their intended marketing mix for the Seabin. While they have done well at describing the product, they lack insight into what the price, placement, and promotion for the product will be. Addressing this will put more confidence in future investment.

A huge cause of concern that should hold investors back is the lack of a detailed marketing plan. Turton and Ceglinski have yet to issue any type of future layout of their marketing for the Seabin, which is alarming since they have announced that they plan to start selling the product as soon as the end of 2016. Simply put, anyone would be foolish to invest if the two cannot organize the next step that Seabin is entering. If Turton and Ceglinski do have their marketing mix, they need to launch it immediately on the Seabin website in order to gain trust and make potential investors feel more secure. The Business Dictionary labels the marketing mix as the elements that are within control of the company. An easy way to remember these elements is as the 4Ps: product, placement, price, and promotion (Business Dictionary).

Product: Turton and Ceglinski have already done a great job at defining their product as they were successfully able to make their Indiegogo video go viral and raise attention for the Seabin. What they have yet to do is tell fans, supporters, and investors what the price, placement, and promotion for the Seabin will be.

Price: Before the product can be taken seriously, investors are going to need to know the price. Turton and Ceglinski have already collected $270,000 which raises the question of where exactly that money has gone. Knowing whether the product will be expensive or cheap can be a huge telling as to whether investors think it has a chance of surviving in the market. This price will have to be adjusted across markets as Seabin develops more versatility in order to meet demand.

Placement: As for placement, it seems apparent that the product should be sold in the online market. People may not recognize the Seabin at first glance, so giving them the option to purchase online is a huge advantage as opposed to putting the device in a store and trying to market it without any brand knowledge. This leads to the last recommendation of how Turton and Ceglinski should promote the product in

the first place.

Promotion: While Turton and Ceglinski have successfully created interest in an eco-friendly product in their Indiegogo video, they have not confirmed any demand or interest in the groups they are attempting to sell to. Turton and Ceglinski need to market straight to the middleman in order to assure that the Seabin gets into the waters. Selling to individual boat owners and yacht clubs might pose as a huge risk if the green attitudes are not shared by this segment. If Turton and Ceglinski can convince manufacturers to supply the Seabin and hide it within the cost of products, they can cash out and make sure that their product makes it into the waters. By targeting manufacturers, Turton and Ceglinski do not have to worry about demand issues of their target segment. Instead, Seabin can come standard on any boat sold in the market, without buyers even knowing it.

Of course, it is important to note that complete transparency in this situation can be dangerous as well. Giving every detail of a marketing plan would give competitors critical information that would put the Seabin at risk. But with little information available to the public, it would be very unlikely that someone would consider investment, because of the fact that it would be a risky move to invest blindly in Seabin's marketing.

Assessment of the Target Segment

- **Current Situation:** Turton and Ceglinski have revealed that they intend to sell the product to marinas, ports, and yacht clubs.

- **Problem:** No evidence has been released that supports demand in this segment. If investors have no facts to support that the product is being aimed at the right segment, they also have no reason to believe it can be successful.

- **Recommendations:** If they haven't done so already, Turton and Ceglinski need to conduct marketing research in order to solidify that they have the correct target segment. Running research programs such as surveys and focus groups can help the two test the demand in their current segment, as well as help them potentially spot demand in other segments.

Current Segment: Turton and Ceglinski have done very little to address their target segment. Yes, the two have at least started somewhere by telling investors that they plan

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to sell Seabin to marinas, ports, and yacht clubs, but they lack the critical information of whether or not Seabin can survive in this market. All that the two have said about matter is that the water environment is great for these segments because of the fact that no storm water affects it. This sounds good in concept, but it by no means is telling that the product will sell to this segment just because it works in it.

Marketing Research: If anyone is going to invest more money into the Seabin, they need to be sure that Turton and Ceglinski have done their homework and know that the product will stand out in the marketplace. Turton and Ceglinski should direct a chunk of their Indiegogo investment money towards marketing research if they have not already. What's interesting about marketing research is it allows businesses to market their products in different ways in order to optimize models for the different segments. If Turton and Ceglinski want to maximize profits for the Seabin, they need to think about expanding to other segments and not just strictly focusing on marinas, ports, and yacht clubs. Running marketing research tests such as surveys and focus groups is a great way for Turton and Ceglinski to pick the minds of consumers to make ideal models of the Seabin for multiple segments. In these tests, Turton and Ceglinski have the freedom to modify the concept of the Seabin and ask real consumers their thoughts. From this, they can receive feedback from the consumers and find out what certain segments like and dislike in order to create a model that is best for the segment (eValueD). This will help the two expand the product to not just marinas, ports, and yacht clubs, but also gives them the chance to penetrate the markets of personal pool use, governmental use, boat owner use, and much more. Turton and Ceglinski have not considered selling Seabin to different markets, which brings about the danger that the Seabin is not being marketed to its full potential. Without considering other markets or testing demand in them, Seabin wouldn't be a wise investment simply because of the fact that it would be impossible to maximize profits that Seabin could have if multiple segments were buying it. Investors can feel a lot more confident if Turton and Ceglinski do their research and publish the results because it will translate into more security and more money in their pockets.

Assessment of Product Versatility

- **Current situation:** As of right now, the Seabin is only made in one size. The device is immobile and must be tied to a spot that will hold it in place.

- **Problem:** The lack of versatility means that Turton and Ceglinski are banking on their singular prototype being the only product that consumers want. This

is a move that seriously risks profit maximization if certain groups want the technology of the Seabin, but need it to have different features.

- **Recommendations:** Turton and Ceglinski can seriously benefit from the data they pull from their marketing research. By experimenting with alterations to the Seabin in focus groups, they can find out what consumers want in the Seabin. They can use this to launch multiple models of the Seabin that successfully meet the needs of specific segments.

While the Seabin is a great concept, its lack of versatility is a major setback holding it from reaching profit maximization. While the immobile, trash can sized prototype that Turton and Ceglinski have created up this point may be an ideal product for certain segments, there is no way that this singular model is sustainable across multiple segments.

Government: One clear example of this would be the product desired from a segment that Turton and Ceglinski have yet to consider, the government. Right now, the U.S. government has already invested in technology to remove waste from our world's oceans. Ocean Cleanup is a project in which a large circular device floats around the ocean and collects plastic waste in its path (Ocean Cleanup Crew). It is clear that Seabin has a competitive advantage compared to the Ocean Cleanup because of the fact that the Ocean Cleanup lacks the filter feature that Seabin contains. While Seabin can filter water and rid it of dangerous contaminants like oil and detergent, the Ocean Cleanup is limited to to only collecting plastic at the surface. If Turton and Ceglinski can adjust the Seabin by making it larger and mobile for the government, they can collect huge amounts of profit from an agency that is clearly willing to invest in cleaning the oceans.

Personal Pool Industry: Another market that would be prime for Seabin would be the personal pool industry. Right now, vacuum cleaners used in home pools sell for a very high price, leaving a great opportunity for market penetration at a low cost point of difference (Sam's Club Vacuum Cleaners). If Turton and Ceglinski can produce units of the Seabin at a lower cost (perhaps by shrinking the device or using other material), they can enter the market and compete with more expensive brands.

Focus Groups: What it comes down to is the fact that there are plenty of other target markets for Turton and Ceglinski to consider before they launch the Seabin. Marketing research, specifically focus groups, would provide the two the ability to consider different concepts for the Seabin. This would allow them to hear direct feedback from the consumers

who would potentially be buying this product, allowing them to categorize positive and negative attributions of the device within segments. Once they know what different markets want and don't want with the Seabin, they can create multiple models that meet the needs of the consumers of the different markets they have researched. This preparation and analysis would increase their chances of finding demand and success when the Seabin finally launches, and would increase their profits.

Conclusion and Recommendations

Turton and Ceglinski have started on the right path by promoting the Seabin in order to gain mass amounts of investment money from the public. While their efforts, along with a great product idea, have gotten them this far, it would seem as though they are unprepared to tread into deeper water. The two have a high potential for success, but have made decisions up to this point that could severely prohibit this potential. Since the public is the main investor for the Seabin, it ultimately has the power to push the hands of Turton and Ceglinski and sway them in the right direction to optimize the chance of success. The following list is a breakdown of what needs to be done before investment can be made with confidence, and any potential investor should push for these changes to be made in order to help Turton and Ceglinski get on the right track.

- A basic marketing plan needs to be released. Obviously, releasing every bit of information would be foolish and revealing, but leaving the public in the dark leads to blind investment. In order to make sure research is done and that there is indeed a plan, Turton and Ceglinski need to publish some information on the marketing mix.

- Turton and Ceglinski need to invest money into marketing research. The benefits of finding different segments for the Seabin highly outweigh the costs of the research. This will increase security in investment and help the Seabin optimize potential profits.

- The Seabin needs to develop more capabilities and multiple models must be produced. One prototype is not sustainable across multiple markets, and adding versatility will increase the chances of different segments having demand.

If Turton and Ceglinski cannot meet these requests, investment in Seabin is not promising. These adjustments would add so much value and security in investment that

it would be foolish to pass up. It would be a shame to see a product like the Seabin with such high potential go under in the market, but as of right now it is not being managed well enough to ensure success. Until they modify their current business plan, Turton and Ceglinski cannot receive more investment and risk the money of more investors.

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Breakthroughs in Biochar

By Evan Valencia

After the fallout of World War II, many countries of the world came together to form the United Nations (UN). At the time, parts of the world were rebuilding their infrastructure, ideologies, and governments. The goals of the UN are to promote peace, protect human rights, and foster world development. When conflict and challenge arise on the global scale, the UN reacts by holding conferences, drafting peace resolutions, or setting worldwide goals. Citizens, industry, and governments are tasked with following the advice of the UN. When we do, the world can be improved. Since its conception, the attempts to solve issues such as genocide, revolution, disease outbreak, nuclear war arms, and even space travel have had well-orchestrated responses.

Seventy years later, one of the world's greatest challenges is practicing sustainable development in order to eradicate poverty and promote equality. The UN's response came as a list of seventeen sustainable development goals. The goals consist of ending poverty, solving world hunger, achieving gender equality, and taking urgent action to combat climate change (General Assembly, 2015). In response, environmental engineers have been researching innovative solutions to the goals. Rethinking the way that we reduce, reuse, and recycle waste materials has led to many breakthroughs in sustainable development.

Biochar technologies are answering the call of the sustainable development goals. The diverse applications are pushing the boundaries in the fields of sanitation, agriculture, and energy. To understand the applications and true potential of biochar, one must first understand how it is made and where it was first used.

Origins

While some breakthroughs require years of toil and frustration, others take only a good dose of open mindedness to open a door of opportunity. Sustainable development is said to be a practice that meets the needs of the present without compromising the ability of future generations to meet their own needs (General Assembly, 2015). As we witness our planet's depletion of many natural resources, we notice a trend towards more renewable resources such as solar energy, hydropower, and recycled materials. When it comes to renewable resources, there isn't a source much better than a waste product with no known uses. Some of the most prevalent waste products are all organic; food, industry, and human waste are all examples. All these materials are forms of biomass that can be utilized as a renewable resource when turned into biochar.
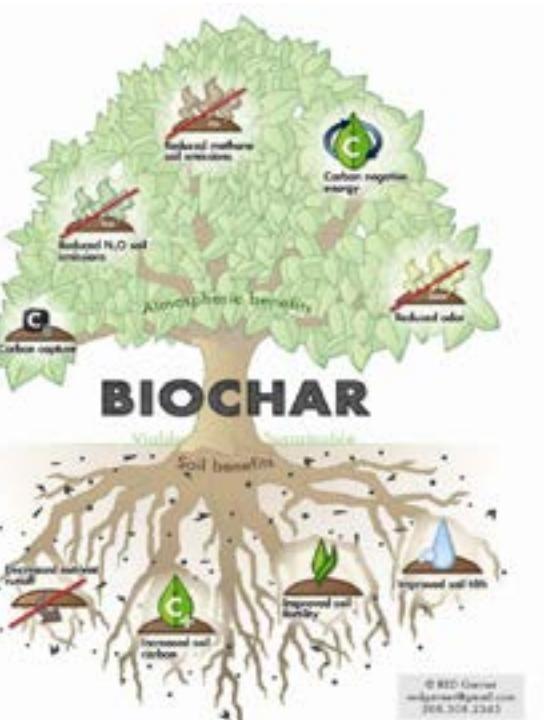

Figure 1: Biochar Diagram

Biochar is a solid material, similar to charcoal in appearance, made from a wide variety of organic materials through a process called pyrolysis. Pyrolysis requires an oven that heats biomass without the presence of oxygen. Fecal matter, logging scraps, and food waste are just some examples of materials that can be used to make biochar (International Biochar Initiative, 2017). The final product has applications that are extensive and evolving. Biochar differs from charcoal in many ways. While charcoal is commercially produced from wood and contributes to deforestation, biochar can be made from a wider variety of waste materials. Biochar stores more carbon than charcoal which acts as a better fertilizer and carbon reducer. Burning biochar is cleaner because less carbon is released in the process than wood or wood charcoal. Figure 1 shows the life cycle of biochar. The first known use of biochar dates back to ancient Amazonian agricultural practices. These "terra preta," or "black earth," regions have extremely rich and charred soil. Soil scientists believe that farmers would slash, burn, and bury plant material in order to create a smoldering in the absence of oxygen. The result was fertile soil that could support the food demand for ancient Amazonians. Today, environmental engineers are pushing the boundaries of possibility with biochar to meet the energy, sanitation, and food demands of our world.
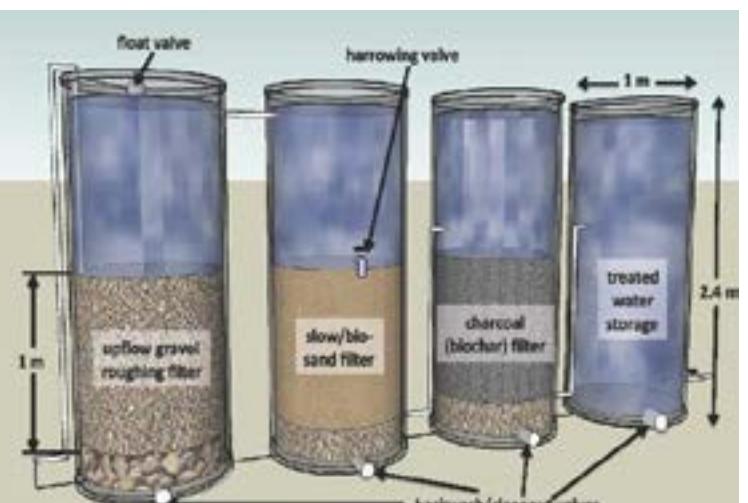

Figure 2: Biochar in Potable Water System

Current Applications

The concentrations of hazardous chemicals like pesticides, herbicides, and pharmaceutical residues are entering more and more water supplies around the world. Countries with less restrictive regulations on dumping and the use agricultural chemicals often have a higher risk of contamination with less infrastructure to treat it. One gram of biochar contains up to about 9,000 square feet of surface area, which is about the same size as two football fields (Nelson, 2012). These thousands of microscopic pathways in every piece of biochar create a very precise water filter. Figure 2 shows how biochar is implemented after larger particles have been filtered out by sand and gravel. The biochar stage removes the smallest particulates such as pesticides, herbicides, and pharmaceutical residues. Potable water systems with this added chamber have a much greater importance in areas where hazardous chemicals have been put into the environment. Fortunately, biochar kilns can be made with primitive supplies and implemented immediately.

One non-profit organization working on these systems is called Aqueous Solutions; they work on decentralized, small-scale water treatment and sanitation systems in Southeast Asia (Aqueous Solutions, 2010). Many of the systems they design utilize biochar to enhance water quality for these often politically and economically marginalized communities. Efforts like these bring to life sustainable solutions and empower communities to build their own potable water systems.

Biochar's high porosity yields a real-world application that can battle the world's food crisis. When used as a fertilizer, biochar absorbs and preserves valuable nutrients in the soil; therefore, less artificial fertilizer is needed. When fields need fewer artificial nutrients, agricultural runoff pollutes the environment less and damaging phenomena such as eutrophication can be avoided. Biochar will also become saturated with water and will store water for dry seasons. In addition, biochar promotes the growth of microorganisms known to promote the health of crops. All these qualities create an ideal fertilizer. The potential for biochar to assist in combating the world's ever-increasing demand for food is very promising.

The production of biochar releases less carbon dioxide, a greenhouse gas, compared to burning biomass waste or creating normal charcoal. The result is a sort of carbon bank. As plants grow, they release carbon into the atmosphere. When biomass is converted into biochar, that carbon is stored. Biochar is known to be carbon-negative and one of the only materials to have the ability to effectively take carbon out of the atmosphere (Doyle, 2014). In a time where the majority of our industrial practices create copious amounts of carbon, the chance to use a carbon-negative material is too great to pass up.

Research and the Future

In 2011, the Bill and Melinda Gates Foundation initiated the "Reinvent the Toilet Challenge." They challenged engineers around the world "to bring sustainable sanitation solutions to the 2.5 billion people worldwide who don't have access to safe, affordable sanitation" (Bill and Melinda Gates Foundation, 2017). The foundation awarded universities and research centers around the world with grants to create something. The University of Colorado Boulder answered the challenge with solar powered biochar production. Figure 3 depicts the completed product. This toilet is affordable, operates off the grid, treats human waste, and creates biochar (Sol-Char Sanitation, n.d.). This innovative technology separates urine from solid waste, and solar dishes concentrate heat energy into a small area to achieve pyrolysis of the solid waste. The final product is biochar. The Sol-Char Team at CU Boulder ensures that the final system is sustainable. The majority of the materials used can be located all around the world. No electrical or plumbing connections are required. The high temperatures achieved by the solar dishes completely disinfects human waste.
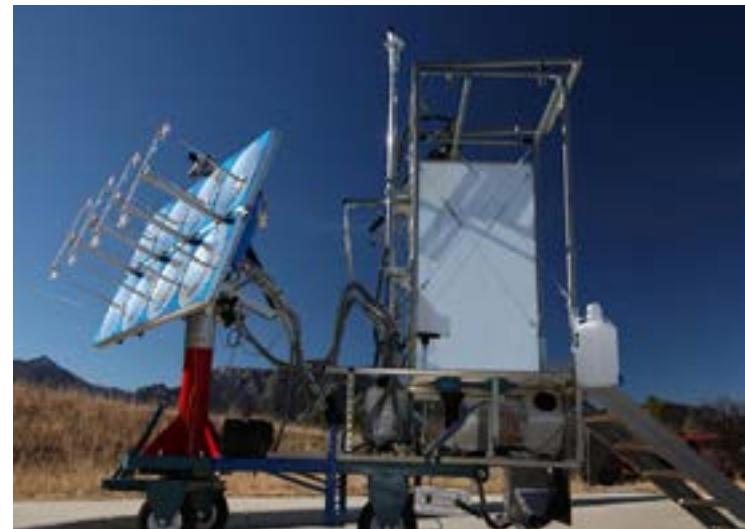
Figure 3: Sol-Char Toilet at CU Boulder

Continuing research at CU Boulder on biochar is extensive. One example uses fecal char briquettes for heating and cooking. Some benefits include making a useful product out of human waste, burning cleaner than other fuels sources, and releasing large amounts of energy. Another application being scientists are also researching is odor and exhaust treatment. Biochar has an ability to correct itself. When toxic gases are released during pyrolysis, biochar can be used to filter those same gases. The "Reinvent the Toilet Challenge" opened many doors. Biochar research breakthroughs like this one are being made all around the world. These projects are pushing the boundaries and taking the risks necessary to implement biochar to its true potential.

Conclusion

While the problem-solving applications of biochar are impressive, the philosophy behind biochar research and implementation beckons sustainability. In order to achieve the UN's sustainable development goals, the world needs to reinvent many aspects of everyday life. Energy must be made renewable. Water and food industries must adopt sustainable practices. Populations must learn to be less wasteful. The exciting part about biochar is that it has capabilities to solve problems in many realms of sustainability. To make one man's trash into another man's treasure is economical. To make one man's trash into his own treasure is sustainable.

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Figure 1 http://www.biochar-international.org/biochar

Figure 2 http://www.biochar-international.org/profile/water_filtration

Figure 3 http://www.colorado.edu/solchar/

Poster Series

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