About the Staff

Jake Norris, Editor-in-Chief

Jake Norris, a member of Oscar company, was born and raised in Anderson, South Carolina. He is a computer science major. Jake has served on the leadership team of the Baptist Collegiate Ministry. He is also active in The Citadel's math club and his church, Uptown Church. When he is not at The Citadel, Jake works as a carpenter. After graduation, Jake plans to pursue a job in the automotive industry developing technology for cars.

Taylor Diggs, Assistant Editor-in-Chief

Taylor, is a sophomore from Scotch Plains, New Jersey. She is a Political Science major and Spanish minor, with plans to minor in International Relations. She is a recipient of coveted W. Steve Weston Jr., Class of 1938, Scholarship. She has received Gold Star and Deans List honors every semester. Taylor is a Second Battalion legacy, as her father graduated Echo Class of '87. She is a member of the NCAA Division I Women's Soccer Program. Taylor is also on track to receive a Gold Seal recognition from the Honors Program upon graduation. She plans to attend law school and pursue a career in public interest law.

Carleton Bailiff III, Assistant Editor-in-Chief

Carleton Bailiff III is a junior from Blythewood, SC. He is pursuing a B.A. in Psychology with a double minor in Fine Arts and Education. This is his 2nd year as a part of *The Gold Star Journal* Editing Staff. A member of the Citadel Honors Program, Carleton has proved himself to be a distinguished student-cadet being named a Star of the West Summer Scholar and a Citadel Global Scholar; he has earned Gold Stars for each semester at The Citadel and President's List honors twice; he has also held such cadet positions as Company Clerk. In addition to his studies, Carleton plays the alto saxophone in the Regimental Band & Pipes, sings with and serves as Co-Chaplain to The Citadel Gospel Choir, and works as a supplemental instructor/tutor. Upon graduation, Carleton will pursue a Fulbright Teaching Assistantship in Sub-Saharan Africa and work toward obtaining a Ph.D. in Clinical Psychology in order to become a school psychologist in Title I secondary schools.

About the Staff

Daniel Wilkes, Editor

Daniel, a Junior within Romeo Company, was raised in Atlanta, Georgia. He is a Political Science and History double major with a focus on Pre-Law. Daniel is extremely involved in the Catholic Campus Ministry and the Citadel's chapter of the Political Science Honor Society, alongside holding leadership positions in both The Citadel's Student Council and The Citadel's chapter of the National History Honor Society. Following graduation, Daniel plans to attend a top-tier Law School, where he will study to become a Public Defender.

Steven Jones, Editor

Steven is a Mechanical Engineering major and a member of the Honors Program at The Citadel. He is from Anderson, South Carolina, and a graduate of T.L. Hanna High School. Steven has become an active member of The Citadel Pistol team, qualifying for National Collegiate Championships and Junior Olympics. In addition, he is a member of The Citadel Regimental Pipes and Band. In the future, he hopes to pursue a career in Aerospace Engineering.

Ashley Ruiz, Editor

Ashley is a Political Science and Intelligence double major at The Citadel. She is a member of both the Honors Program and the Citadel Distinguished Scholars Program. Ashley is originally from Taylor, Michigan. At The Citadel she is highly involved in cadet life and numerous clubs, which include: the Pistol Team, Color Guard, Phi Kappa Phi Honor Society, Company Community Engagement Council, NCBI, the Humanitarian Club, and Baptist Collegiate Ministries. After graduation, Ashley hopes to attend Oxford to obtain an MPhil in International Relations, and to later pursue a career with the U.S. Foreign Service.

Dr. Suzanne Mabrouk, Advisor and Founder

Dr. Mabrouk has been teaching chemistry at The Citadel since fall 1993. Her areas of expertise include organic chemistry, introductory chemistry, and the chemistry of art. She enjoys helping students learn chemistry and working on *The Gold Star Journal* with each group of editors.

Dedication
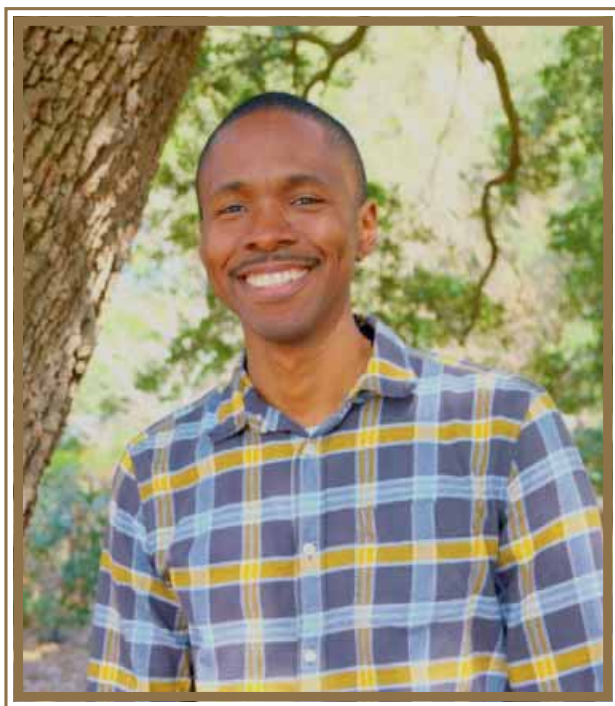
John Whitten

On every college campus, there are silent heroes. This hero works diligently, always available to assist and to teach. Rarely are these individuals recognized for their hard work and service to students and faculty. They are integral members of the campus community.

John Whitten, a Lowcountry native, received a degree in Landscape Architecture from the Clemson University. Not only is Mr. Whitten an excellent teacher and mentor, but he is also a doting husband and father to his wife Jeanie, and two sons, Lucas and Austin.

Mr. Whitten has used his aptitude for computer software such as Adobe Illustrator and Photoshop throughout his career. Originally his skills were applied to Landscape Architecture, but in May 2011 he transitioned to his current position at The Citadel. Mr. Whitten provides essential guidance to faculty, staff, and students to aid them in mastering computer software programs such as Adobe Photoshop, Illustrator and our favorite, InDesign. His skills have not only been applied to the creation of *The Gold Star Journal*, but also to other academic pursuits on campus such as the creation of scientific posters for Student Excellence Day. For the excellent work that Multimedia Services does everyday, Mr. Whitten and his coworkers were the recipients of the 2019 Team of the Year Award.

The 24th edition of *The Gold Star Journal* is dedicated to John Whitten in honor of his nine years of education, assistance, and encouragement. Mr. Whitten is an essential member of The Citadel Family, and also an honorary member of *The Gold Star Journal* team. Thank you and we look forward to many more editions with you!

Sincerely,

The Editors of *The Gold Star Journal*

A Letter From the Editors

Dear Reader,

We the editors are immensely proud of this 24th edition of *The Gold Star Journal*. Readers might notice that this issue looks substantially different than the past several years. From the day we first met as a team on May 1st, 2019, we were tasked with reinventing the journal. After unfortunate circumstances forced an overhaul of the staff in mid-October, and the much appreciated return of a seasoned editor in January, we searched diligently among the submissions for the best non-fiction papers and distinctive photographs. We received 33 articles and 70 photographs. In the end, we truly believe that we have selected the eight highest quality papers and the fifteen best photographs The Citadel populace has to offer.

The featured papers represent a broad spectrum of disciplines at The Citadel, ranging from mathematics to German Literature. This compilation has created one amazing masterpiece. Our *Best Overall Submission* this year is awarded to SSgt Mark Vowels II for his research on human trafficking. Our *Best Graduate Submission* is awarded to Mr. Blake Harllee as he delved into the Rwandan Genocide. Matthew Blair provided the *Best Undergraduate Submission* with his original statistical research on the wisdom of the crowd. Kennedy Fravel contributed an insightful review of German Romantic literature. Harrison Wedgeworth looked at the gentrification of Charleston and the surrounding areas, while Luke Timmerman gave a look at nuclear power in the 21st century. Rounding out the journal is Elizabeth Spoehel and her analysis of artificial intelligence, and Grant Speer's examination of the situation regarding Antarctica. This edition also features photography from Shiloh Brooks, Garrett Saylor, James Jeffcoat, Noah Mills, and Taylor Sterba. Winning the *Best Photograph* is Zachary Adkins for the cannon photograph featured in the front, and photograph on the last page is also his. Winning *The GSJ Distinction in Photography* is Dashawn Costley for his many contributions to this edition.

This is also the first time in ten years that the journal is being dedicated. After a particularly long training session on layout design with Mr. John Whitten, one of our editors suggested that we dedicate the journal to him. We have worked hard on this issue and the upcoming Academic Conference to surprise him with this dedication. We again thank him for all of his effort on the journal for the past nine years. His input and help have been invaluable.

Lastly, but certainly not least, we want to thank our advisor, Dr. Suzanne Mabrouk. She went to bat for us time and time again as she helped us create the best journal to date. Dr. Mabrouk has worked on this journal for 24 years, and even though there have been years when it was extremely tough, she never fails to deliver a wonderful product to The Citadel family. Her contributions to this edition cannot be understated.

Jake Norris, Editor-in-Chief

Steven Jones, Editor

Taylor Diggs, Assistant Editor-in-Chief

Daniel Wilkes, Editor

Carleton Bailiff III, Assistant Editor-in-Chief

Ashley Ruiz, Editor

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Defining the Gap between Reality and the Fantastic in E.T.A. Hoffman's Romantic Literature

Kennedy Fravel

Kennedy Fravel, a freshman Biology major, is a member of Hotel Company. He comes from Irmo, South Carolina. Kennedy plans to minor in Business Administration. He earned Gold Stars during his first semester at The Citadel. After graduation, Kennedy plans to attend The Medical University of South Carolina to one day become a reconstructive plastic surgeon.

Abstract

German Romanticism was a cultural movement that took place in Germanophone countries in the late 18th and early 19th centuries. Intellectuals of this movement, known as naturphilosophers, valued the study of the natural world with an emphasis on the spirit while trying to merge the disciplines of science and literature. "The Golden Pot" and "The Mines of Falun," both by German naturphilosopher E.T.A. Hoffman, illuminate the desire of German Romantic writers to amalgamate the seemingly polar specialties of scientific research and artistic development.

German Romantic literature frequently delves into a realm not so much based in reality, but rather taking characteristics from fantasy. This realm and all of its ideas are known as "the fantastic." One aspect of the fantastic is that the line between imaginary and real is blurred. Although the transition from reality to the fantastic is meant to be covert, it can be identified with the help of science. German Romantic sciences such as galvanism and mesmerism help to make the metaphorical jump from reality to the fantastic more overt to the modern-day reader. Another aspect of German Romantic science that is present in German Romantic literature is the concept of pushing boundaries. German Romantic science sought to push the limits of the natural world and many naturphilosophers (Snelders, 1970) wrote about this process via inclusion of fantastical elements; one such author is E.T.A. Hoffman. In Hoffman's "The Golden Pot" and "The Mines of Falun," geology and alchemical scientific disciplines help to define the disparity between reality and the fantastic while also showing the limit pushing aspect of German Romantic science.

The presence of Romantic sciences, specifically alchemy, in Hoffman's "The Golden Pot" and "The Mines of Falun" are valuable to the works as it illuminates the hiatus between reality and the fantastic. These scientific practices were unusual. Author Robert Richards, claims that historians of nineteenth-century science classify Romantic science as an "aberration" and "higher nonsense" (Richards 3). The seemingly absurd science is what helps to define the gap between the reality and the fantastic realm as many Romantic scientific practices are not even possible in the natural world.

The practice of alchemy is present in "The Golden Pot" and allows the modern reader to identify where fantastic elements come into play. Hoffman writes, "Archivarius Lindhorst disappeared, but returned, carrying in his hand a lovely golden goblet out of which then arose a tall, sparkling blue flame" (Hoffman 89). The golden goblet is a symbol of alchemy as alchemists desired to turn basic metals into gold, which is now known to be an impossible feat. Hoffman's repeated reference to gold and golden items emphasizes the material's importance to alchemical practices.

Along with the precious metal, Hoffman includes the salamander in his text which is a creature important to alchemy as it represents fire. These alchemical symbols help display the difference between reality and the fantastic as humans cannot be salamanders and golden containers with magical powers are things of imagination; the existence of these ideas are simply too absurd to exist in a realm not based in fantasy. Roslynn Hayes of the *HYLE-International Journal for Philosophy of Chemistry* writes, "Ultimately the perennial fascination of the master narrative of alchemy is that it tells a story of what we both desire and fear to know– the story of power beyond our dreams but also beyond our control" (Haynes 24). Power beyond any one person's dreams and beyond any one person's control, such as Lindhorst alchemical feats and powers, can only exist in a fantastic world as no such power exists in earth's natural realm.

Similar to the alchemical references in "The Golden Pot," alchemy in Hoffman's "The Mines of Falun" makes the gap between real and imaginary clear. The alchemical elements used in "The Mines of Falun" present a rather bizarre picture of phenomena in the natural world, allowing Hoffman to separate ideas of the logical world from those of a fantastic world. Elis, a character in the story, says the followning to his fiance: "'Down in the shaft the cherry red sparkling almandine lies enclosed in chlorite and mica, on which is inscribed the chart of our life'" (Hoffman 170). Those who studied alchemy believed there to be a red stone which had the ability to turn regular metals into gold (Holmyard 56). No such stone exists in the natural

world, but Hoffman's reference to a "cherry red" stone is an allusion to the magical philosopher's stone and its uses. Elis also mentions that the stone is inscribed with the "chart" which tells of the life that he and his wife will share (Hoffman 170). No stone can dictate one's path in life and; therefore, the stone represents an unrealistic and fantastic idea.

> "German naturphilosophers possessed the scientific skills to think beyond the limits of the natural world which is evidenced through their practices and the inclusion of motifs in their literary works."

Author Evans Lansing Smith states, "The alchemical dimension of mining and the imagery of the Great Goddess emerges later in the story, when Elis resolves on his marriage night to go down into the caves to retrieve the 'Queen's Heart'" (Smith 228). The reference to the red stone also represents fantasy as it symbolizes the heart of the Queen; the same Queen who seemed to summon Elis to the mines. Hoffman makes many different references to alchemy and alchemical lore in "The Mines of Falun" all of which are undeniably based in the realm of fantasy. The impossible circumstances under which these alchemical practices occur allows the reader to discern between the events which take place in reality and those which occur due to uncanny, fantastic forces.

Fantasy also applies to the geological theories developed by German naturphilosophers presented in Hoffman's "The Mines of Falun." German naturphilosophers viewed mines in a semi-religious manner. The scientists believed mines to be a gateway to the soul and that venturing down into a mine was a pilgrimage (Ziolkowski 22). Theodore Ziolkowski writes that "At this point the ancient conception of mines and mountain caverns as places of lapidary activity encounters a second folkloristic notion that in the interior of mountains time stands still" (Ziolkowski 34). Mines in German Romantic literature represent a location where

the fantastic world melds with reality due to the reverence German scientists and authors held for deep crevasses.

The idea that mines are the location for supernatural or fantastic events helps the reader to recognize whether a certain event in "The Mine of Falun" is real or based in fantasy. This is evidenced through Torbern, a long dead miner that appears to Elis in the depths of the earth. Hoffman writes, "All at once he saw a black shadow beside him, and as a cutting blast of air scattered the sulfur fumes, he recognized the old miner of Göteborg, who was standing at his side" (Hoffman 163). A characteristic of the fantastic is the subtle transition from reality to the unnatural so it is challenging to determine whether or not Torbern belongs in the real world or the fantastic. This challenge is made easier as Torbern appears in the mines so the reader can assume, and will be affirmed, he has connections to the fantastic realm. Another geological element present in "The Mines of Falun" is the idea of rock formation. German Romantic scientists had many theories concerning the formation of rocks and gems, one being the "petrific seed" theory (petrific meaning a seed which has the properties of a stone). Supporters of this theory held that rocks developed within the earth's surface, much like that of a seed in soil, and had a male or female gender with a sexual role in the reproduction process (Ziolkowski 29). The "petrific seed" theory is evident in Elis's dream when Hoffman writes: "Driven by an unknown power, he strode on; but at that moment everything around him began to stir and, like curling waves, there shot up all around him marvelous flowers and plants of glittering metal, the blossoms and leaves of which curled upward from the depths and became intertwined in a most pleasing manner (Hoffman 155).

Engkanto (Ninjatic)

Words such as "flowers," "plants," "blossoms," and "leaves" all help to compare the generation of metals and stones to the germination of a seed. In the eyes of the modern reader, Elis's dream contains many fantastic elements including the metal plants flowering from the hearts of beautiful women. It is now known that rocks and metals are formed under the earth's crust. The concept that rocks grow like seeds and have genders is a seemingly absurd idea to modern readers as rocks are abiotic. This helps to show the ideas of the fantastic as Elis's dream presents images to the reader which cannot occur in the real world and, therefore, must occur in a world based in fantasy. These Romantic geological elements in "The Mines of Falun" bring to light the differences between reality and the fantastic in the eyes of the modern reader.

Besides its relation to the fantastic, German Romantic science shows the desire to push the boundaries of German Romantic literature. Robin Pendoley states that, "Thinking beyond borders is a process requiring specific skills" (Pendoley 1). German naturphilosophers possessed the scientific skills to think beyond the limits of the natural world which is evidenced through their practices and the inclusion of motifs in their literary works. One such example is Anselmus's escape from the glass bottle in "The Golden Pot" when Hoffman writes, "As the melodious tone rung through the room, swelling higher and higher, the glass which enclosed Anselmus shattered, and he dashed into the arms of his dear and gentle Serpintina" (Hoffman 81). The boundary between Anselmus and Serpintina, his desire, being broken represents the desire of alchemists to cross the borders of the natural world. Alchemists of the time did not know that gold could not be created from other metals, so their desire to break natural

limits was never achieved. Just like Anselmus was separated from his desired Serpintina, German alchemists could not break the boundary allowing them to achieve what Anselmus did.

Another example of the imagery of borders and boundaries can be seen in "The Mines of Falun" when Elis's preserved body is found petrified in sulfuric acid. Hoffman writes, "When they brought the body to the surface, it appeared to be petrified" (Hoffman 171). There is a physical border between Elis and Ulla. Just like that of Anselmus and alchemy, this barrier represents the disparity between geological theories of the time concerning rock formation. There were a few geological theories which schismed the German geological community as some scientists supported Neptunism, others Plutonism, and even the "petrific seed" theory (Ziolkowski 29). The boundary between different schools of thought prevented widespread collaboration to research and to develop a reasonable theory of rock formation. The inclusion of borders as a motif in German Romantic literature shows the challenges which the natural world presented to German Romantic scientists while also acting as commentary on the state of German Romantic research.

German Romantic science is often present in German Romantic literature as the naturphilosophers of the time valued the study of the natural world. Often referenced in these literary works were ideas which no longer align with today's modern scientific processes. These included ideas such as turning regular metals into gold using magical stones, altering the flow of magnetic fluid to treat illness, and many other strange theories and practices. Since these ideas have no basis in the modern or the natural world, references to them in German Romantic literature help to outline a boundary between the natural world and a world with far more fantastic elements despite the desire for a covert border.

E.T.A. Hoffman's short stories "The Golden Pot" and "The Mines of Falun" are both riddled with references to alchemy and other contemporary scientific interests. Ironically, these references of natural science cannot occur in the natural world; the only realm in which these ideas can exist is one planted firmly in fantasy. Both stories also include commentary on the German science through the use of border motifs. The imagery of a border or some kind of boundary in both texts represents a challenge which German naturphilosphers faced when conducting experiments and developing theories. German Romantic science provides value to German Romantic literature as it applies depth to the works. These commentaries and fantastic elements engulf readers as they explore the subtleties of Romantic science while discovering the fairy tale-like characteristics of the fantastic.

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Rwandan Domestic Counterinsurgency Strategy:
Iron First with International Indifference

Blake Harllee

THE BEST GRADUATE SUBMISSION

Blake Harllee is a graduate student in the Military History program at The Citadel. Mr. Harllee is a veteran of the United States Army, where he served in the Air Defense Artillery. He earned his Bachelor of Science in History as well as his Master's in Business Administration from Texas Wesleyan University.

Introduction

After the Rwandan Patriotic Army (RPA) emerged victorious in the Rwandan Civil War in July of 1994, they were faced with an almost insurmountable task. First, they were forced to immediately make the transition from insurgent to counterinsurgent as a result of, the French military allowing the genocidal Hutu power regime to escape across the border into Zaire. Not only that, but they had to grapple with the aftermath of nearly a million people being murdered in a country that is the size of Vermont. This paper will set forth the argument that the immense success of Rwanda's counterinsurgency campaign was due to several varied factors, most of which are nearly impossible to replicate as a result of the conditions in which the campaign existed. The Rwandan counterinsurgency strategy can be divided into two separate campaigns: the domestic counterinsurgency campaign and the foreign counterinsurgency campaign. This paper will focus on the domestic aspect of the Rwandan strategy, as the international component has been focused on extensively as a result of it triggering the First and Second Congo Wars.

As mentioned previously, the Rwandan counterinsurgency campaign is nearly impossible to replicate for several reasons. First, the geopolitical conditions that the Rwandan Patriotic Front (RPF) were operating in could easily be described as the "Goldilocks" zone of counterinsurgency. The nation of Rwanda is landlocked and shares borders with the nations of Uganda, Kenya, Burundi, and the Democratic Republic of Congo (called Zaire at the time of the RPF victory). During the waning days of the Rwandan Civil War, the Hutu regime fled to the northern part of Rwanda, where Hutu militancy was most heavily concentrated. As the RPA began to advance, the French intervened and allowed the defeated regime to cross into the eastern part of

Abstract

This article analyzes the domestic counterinsurgency police of the Kagame Regime in Rwanda during the late 1990s. Drawing upon firsthand accounts, journal articles, governmental investigations, and the reports of Human Rights groups, it will be shown that the Rwandan domestic counterinsurgency policy was extremely brutal. Far from being the "city upon a hill" that African nations should emulate, modern Rwanda is a totalitarian police state whose government has brutally repressed all opposition, perceived and imagined. Ranging from targeted assassinations and political arrests to massacres that killed thousands of civilians, the Rwandan program was unique in that it was exceptionally cruel while also accepted by the international community at large. This paper corrects the historiography of Post-Genocide Rwanda, which has been largely ignored or even justified the crimes against humanity committed by Paul Kagame's regime in Kigali.

Zaire, which was and remains a de facto failed state. The concentration of the budding insurgency along a single short border allowed the RPA to allocate resources in a much more effective manner, as the possible locations of insurgent attacks were relatively limited. Instead of being forced to defend the entire country, the RPA was able to station its forces almost exclusively in the northern portions of the country, which were known to be hotbeds of militancy.

This paper will also make the argument that, due to its ability to utilize brutal methods without any threat of repercussion, the Rwandan counterinsurgency campaign was effective. Domestically, the RPF exercises complete and utter control of the political process. The Rwandan elections are widely regarded as illegitimate, with the RPF receiving 98% of the vote on several separate occasions. In addition to a stranglehold over electoral results, any political opposition to President Paul Kagame faces severe punishment and even death if they criticize the government or Kagame. A critical component of the Rwandan counterinsurgency program is the complete limitation of press freedom in the country. Without a free press, the RPF was able to commit any atrocities they wish without any serious threat of losing popular support.

In addition to the domestic measures taken by the RPF to avoid repercussions for the excesses of their counterinsurgency program, this paper will make the argument that the actions of the international community, specifically France and

UN Map of Rwanda, 2015.

the United States, allowed a culture of impunity in the country to develop that, not only allowed but also, encouraged violent repression of perceived opposition. This culture of impunity began at the time of Rwanda's independence from Belgium in 1962 and continues into the present day. This combination of factors has led to the creation of an atmosphere that has given the Rwandan government an enormous amount of success in their counterinsurgency effort, while also making their campaign incredibly difficult to replicate for future counterinsurgents. To properly place the RPF counterinsurgency campaign into proper historical context it is important to understand the relationships that Rwanda had with its two biggest international benefactors- France and the United States. As a result of French desire to expand their sphere of influence in Africa and the desire of the United States to combat communism during the Cold War, a culture of impunity was allowed to develop in the nation. This culture continually reinforced the idea that Rwandan authorities had carte blanche to commit atrocities at will without any threat of losing foreign aid, which importantly was the aid that allowed the government to maintain a stranglehold on power.

When the RPF launched their invasion of Rwanda on October 1, 1990, President Habyarimana immediately sought military assistance from the French government. Jean-Christophe Mitterrand, the son of French President François Mitterrand, was the head of the Presidential Africa Unit in Paris. Upon receiving a call from President Habyarimana informing him of the invasion, Jean-Christophe told French Historian Gerard Prunier (who by sheer

coincidence was with Jean-Christophe when he received the call) that "We are going to send him a few boys, old man Habyarimana. We are going to bail him out. In any case, the whole thing will be over in two or three months'" (Prunier 1995, 100). In an effort to expedite the arrival of French reinforcements, Rwandan soldiers faked an attack on Kigali during the night of October 4th (Human Rights Watch 1999) (Meredith 2011, 494). French soldiers arrived the very next day.

The arrival of French soldiers signified a significant shift in the conflict in several ways. Beyond the obvious advantage in firepower and manpower that the Habyarimana regime received, the French government also reaffirmed their commitment to Kigali that the regime would receive their support regardless of any human rights violations they committed. Historian Mel McNulty describes this culture of impunity by noting that "This belief continued, unconditional French support was sustained by backchannel messages from Paris, particularly from military figures within the Mission militaire de cooperation who had both professional and personal interests in defending the regime and their proteges in the FAR" (McNulty 1997, 34). The Habyarimana regime quickly took advantage of this guarantee, imprisoning over 13,000 people. A report from Human Rights Watch states that "The detainees would be held without charge, thousands of them for months, in deplorable conditions. Many were tortured and dozens died" (Human Rights Watch 1999).

Between October of 1990 and July of 1994, French and RPF soldiers clashed at several different points, although the largest French impact came in their utilization of advanced artillery to repel RPF advances. The anti-Tutsi pogroms, that would eventually culminate in genocide, began the very same week that French reinforcements arrived and slowly accelerated before the genocide began (Guichaoua 2017, 34). Despite the massive wave of killings, the French never wavered in their support of the Habyarimana regime. Even when the RPF finally took control of the country and made the genocide known to the world, French support for the Hutu Power regime never wavered. Not only did France never intervene to stop the genocide, but after the regime realized they were defeated, their French benefactors instead launched Opération Turquoise. Under the guise of humanitarian relief, the French military deployed a force of over 3,000 soldiers, with an array of heavy mortars, attack helicopters, and bombers (Staunton 302). Instead of helping to quell tensions however, the French military force served as a rearguard for the defeated Hutu Power regime and military (McNulty 1997, 39-40) (Staunton 2016, 302). As a result, the defeated regime was able to safely cross the border into Zaire with nearly all of their military weaponry and equipment still intact. Once across the border, the defeated military took control of United Nations' camps and began to plot their retaking of the nation. Not only did France not intervene to stop the genocide, but their active fostering of a culture of impunity in Rwanda did

Drive by Shiloh Brooks.

Harllee

nothing except encourage further violence on the part of the Hutu Power regime.

The Kibeho Massacre

After the RPF seized power, they were forced to confront the unique crisis that the refugee camps in Zaire and southern Rwanda presented. As a result of Opération Turquoise, Kagame knew that there was a massive and still well-armed insurgency just across the border in Zaire. The Zairean camps held about 2.1 million people, about a third of the total post-genocide population in Rwanda (Prunier 2009, 5). In addition to the camps just across the border, about half a million Rwandans were living in Internally Displaced Persons (IDP) Camps in the south of the country (Ibid., 5). Randolph Kent, the former director of the United Nations Rwanda Emergency Office described the RPF attitude towards the internal camps, writing that: "The government's hostility to the camps was profound, visceral. It stemmed from their link to the genocide…A large portion of those who had taken shelter within Zone Turquoise (where Kibeho was located) were seen by the government as perpetrators of the genocide" (Ibid., 38).

By March of 1995, the number of IDP Camps in the refugee camps had dropped to about 220,000 from a high of 600,000 at the end of 1994 (Human Rights Watch 1995). Despite this decrease, Kagame viewed the camps as hotbeds of insurgency, and therefore a serious security threat. After unsuccessfully lobbying the United Nations for assistance in closing the camps, Kagame decided to utilize the RPA to close the camps for good. The largest of these camps was the IDP camp at Kibeho, which had a population of approximately 120,000 people (Human Rights Watch 1996).

The RPA mission to close the Kibeho camp began on April 18, 1995, when RPA soldiers entered the camp and began firing warning shots in the air in order to force the residents into the center of the camp. As a result, nine people died from being crushed in the stampede on the first day (Human Rights Watch 1996). From April 20-22, thousands of people were massacred when RPA soldiers began firing indiscriminately into the crowd with machine guns and rocket-propelled grenade launchers (Ibid). Later in the day, 60mm mortars were used (Prunier 2009, 41). On April 23rd, fleeing unarmed civilians, these were men, women, and children, were killed (Ibid., 41). After the soldiers massacred the inhabitants of the camp, they began a sweep to find any military equipment that could help justify their actions. According to a report from Radio Rwanda, all the soldiers found were two rifles (an AK-47 and a G-3), five machetes, and a single grenade (Prunier 2009, 379).

> "When Judge Gratien Ruhorahoza ordered forty prisoners to be freed as a result of having no files of any kind, he was kidnapped and murdered by the military."

At daybreak of April 23rd, the Australian Medical Corps, who were present for the entire incident, began counting the dead bodies. They had counted a total of 4,200 before they were stopped by Rwandan soldiers (Ibid., 41). Despite the eyewitnesses from the Australian Medical Corps and United Nations tallying a much higher number of fatalities, the Rwandan government asserted that only about three hundred people were killed (Human Rights Watch 1996) (Prunier 2009, 41). The massacres continued after the IDPs left Kibeho. It is estimated that somewhere between 20,000 and 30,000 IDPs were killed after leaving Kibeho (Prunier 2009, 378-379). In a continuation of the previously discussed culture of impunity in Rwanda, the European Union suspended aid to the country in April when the news of the massacre began to spread. By July, the aid was fully restored without any conditions attached (Human Rights Watch 1996). The United States issued a statement "expressing concern" for the massacre but never pressed the issue further (Human Rights Watch 1996).

The result of the massacre at Kibeho and the indiscriminate killings afterward were horrific, yet unquestionably helpful to the Rwandan counterinsurgency campaign. It was now recognized throughout the country that the slightest hint of dissent or involvement with the Hutu Power insurgency would be considered a capital offense. The RPA soldiers would not hesitate to kill anyone and everyone, including children, to accomplish their task.

Law Enforcement

After seizing power, with the defeat of the Hutu Power regime, the RPF was forced to make the transition from insurgent to counterinsurgent immediately. This transition, difficult enough on its own, was made even more difficult as a result of the mass confusion that permeated the small nation after the genocide. Former perpetrators of the genocide were murdering anyone who could identify them, which was an issue that all

parties involved expected to occur. What came as an absolute shock was the rash of "accusation cooperatives," in which survivors of the genocide would receive money or political favor in return for falsely accusing another party of participation in atrocities, mostly for economic gain (Prunier 2009, 3). This combination of factors made proper identification of perpetrators nearly impossible, which further stoked the already smoldering tension between the Tutsi-led RPF and the Hutu that had remained in the country.

In order to wage an effective counterinsurgency effort, the first goal of the RPF was to arrest anyone who was even accused of complicity in the genocide, regardless of the evidence against them. The idea was to isolate every possible insurgent before any serious attacks could be launched or recruiting could be done, even if that meant arresting innocent people who had no connection to the insurgency or former regime. By the beginning of 1995, between 100 and 150 people were being arrested daily (Prunier 2009, 11). This

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Cadets and Friends Crossing Mt. Moosilauke, New Hampshire at 4802 ft. by Garrett Saylor

was in a country with only about 3.5 million people. So the arrest rates were rather extraordinary. The conditions that the prisoners, who received no due process, were placed into were nearly beyond parallel in their asperity. March 1995, twenty-two of the prisoners suffocated to death in an overcrowded prison cell (Ibid., 11). The entire process lacked due process or fairness. When Judge Gratien Ruhorahoza ordered forty prisoners to be freed as a result of having no files of any kind, he was kidnapped and murdered by the military (Ibid., 11). In total, twenty-six judges (in addition to Judge Ruhorahoza) were arrested when they attempted

the direction of an *effendi*, the Swahili term for sergeant. They are responsible for supervising local political life. While some may be salaried, they also support themselves by appropriating the property of local people, a process called "helping yourself" or "liberating" the goods in question" (Human Rights Watch 1995). The utilization of these abakada served a critical role in the Rwandan counterinsurgency campaign. Because they were both extremely powerful (a mere accusation resulted in imprisonment and possibly death) and completely anonymous to the general public, they were able to exist as a significant force multiplier

to free prisoners who they believed to be innocent. All of them were arrested and charged with being involved in the genocide, despite no evidence for those assertions (Ibid., 11-12).

  This policy was carried out at the local level by the abakada, who were RPA political officers. The officers functioned as political cadre who were in charge of indoctrination, as well as those who operated as a form of secret police (Rever 2016). A 1995 report from Human Rights Watch describes the unique power that the officers possessed: "Dressed in civilian clothes, they operate under

for the RPF. This inability to easily identify intelligence agents among the general population made planning any insurgency or attack extremely difficult and made recruiting new members nearly impossible. The domination of the Rwandan state and political system by the intelligence and military apparatus has been so complete that some researchers have described the country as a "securocracy" (Purdeková, Reyntjens and Wilén 2017).

The threat of arbitrary detention was not the only deterrent utilized by the RPF. A report by Robert Gersony (commissioned by and subsequently embargoed by the United Nations) found that that the RPF indiscriminately murdered between 25,000 and 45,000 people between April and September of 1994 (Prunier 2009, 16). According to eyewitnesses interviewed after the massacres, all of the events followed the same general formula. First, RPF soldiers and abakada would enter a village in a friendly manner. A few days later, the abakada would assemble the townspeople for a "peace and reconciliation meeting," in which

report be suppressed and never published (Ibid., 16).

While Kagame and the RPF government attempted to cloak themselves in plausible deniability regarding the atrocities, this was made impossible by Seth Sendashonga, a Hutu who served as Minister of the Interior in the Government of National Unity. Sendashonga wrote over four hundred memos to Kagame to register his concern about the atrocities, but Kagame refused to ever answer in writing as to avoid leaving a paper trail (Ibid., 18). His actions reached a point of no return with Kagame when Sendashonga ordered the

by James Jeffcoat

the villagers would normally attend without fear. It was at these meetings that they would be massacred (Ibid., 16). As mentioned previously, the Rwandan counterinsurgency campaign operated in a geopolitical climate that makes it nearly impossible to replicate in almost any other circumstance. Upon receiving the report that the RPF had arbitrarily murdered tens of thousands of innocent people, the UN Secretary-General Boutros Boutros Ghali and then Assistant Secretary-General Kofi Annan ordered that the

abakada to disband, robbing the RPF of its eyes and ears throughout the country (Prunier 2009, 45). Notably, Sendashonga would be assassinated in 1998 while in exile in Kenya. At the time of his death, he was emerging as a dynamic opposition leader in Rwandan politics who had attained a large amount of international support, especially from Hutu refugees in Zaire. It is widely believed that Kagame ordered the assassination, as the first attempt on Sendashonga's life failed and was carried out by a member of the Rwandan embassy in Nairobi (Human Rights Watch 1998) (Prunier

2009, 365). After the assassination of Patrick Karegeya in Johannesburg, the former head of External Intelligence for the RPF, Kagame declared that "Whoever betrays the country will pay the price, I assure you…Any person still alive who may be plotting against Rwanda, whoever they are, will pay the price" (Human Rights Watch 2014). In another incident, former Army Chief of Staff, General Faustin Kayumba Nywamwasa, had two separate attempts on his life carried out, although he survived both (Goehrung 2017).

These assassinations are not limited to political rivals. Journalists who report critically on the RPF and Kagame have also been murdered, with the most high-profile example being the shooting death of Rwandan journalist Charles Ingabire, who was murdered in Kampala, Uganda (Ibid., 86). These acts were a result of the extreme importance that the RPF places in information warfare. An important aspect of the Rwandan counterinsurgency effort lies in "controlling the narrative." By micromanaging the press in the country and limiting exposure to outside information (to the extent possible), the RPF is able to conduct their brutal campaign without any serious threat of losing popular support. This is also how the RPF is able to utilize propaganda as a counterinsurgency tool, contrary to Galula's assertion that propaganda was a "one-sided weapon" that exclusively favors the insurgency (Galula 2006, 9). While some analysts and historians claim that such a loss of popular support is inevitable (Goehrung 2017) (Prunier 2009), it has not occurred in any discernible way.

While the murders of journalists are the most extreme examples of the emphasis that the Rwandan counterinsurgency program places on information warfare, it is not the only method utilized to achieve their goals. Gérard Prunier, widely regarded as the preeminent historian of the region, was banned from the country after his reporting for Human Rights Watch on the atrocities committed by the RPF (Reyntjens 2010). In the years following the genocide, the United States Department of State, Human Rights Watch, Amnesty International, the United Nations, and the Organisation of African Unity have all written

reports that have criticized the human rights record of the RPF. All have been accused by the RPF of either indirectly facilitating the genocide or of lying in order to further strain ethnic tensions (Reyntjens 2010, 3-7). When the British Broadcasting Corporation reported on several of the incidents in the country, their broadcasts were banned, and two of their journalists were arrested for treason (Ibid., 15). Any criticism of the government or military can result in arrest. While this would be problematic for most governments, Kagame has been able to continually justify such actions by proclaiming them necessary in order to maintain peace and to avoid another genocide. As one report notes, "While it is true that thus far the Kagame regime has not adopted an outward rhetoric of Tutsi dominance, the message is clear in terms of repressing the political opposition along thinly veiled ethnic lines and morally excluding Hutu through the ritualistic reinforcement of their guilt for committing genocide" (Goehrung 2017, 89).

The desire to control the narrative extends into the political process as well. Although Rwanda technically has elections, they are universally considered illegitimate. A 2003 European Union Observer mission found that the election was ripe with "…fraud, intimidation, the manipulation of electoral lists, ballot-box stuffing, lack of secrecy of the vote, and lack of transparency in the counting procedure" (Reyntjens 2010, 11). In 2008, the EU mission found that the RPF had "attained" 98% of the vote. When the Rwandan government decided that the 98% number was "too Stalinist," they reduced their victory to 78.76%, awarding 20% of the vote to two other parties that were not opposition parties but simply "different" parties that fell under the umbrella of the RPF (Ibid., 11). Electoral fraud is enabled as a result of votes not being made public at any level except for the national count (Jones 2016). This tight control of the political process has been a massive success for Rwanda's ongoing counterinsurgency campaign. A report on the political situation in Rwanda concluded that "This campaign of political dismantling has been unremitting and extremely effective. It has

guaranteed that oppositional diaspora activity is decentralised, unfunded, bereft of political or organisational expertise, and confined to online activity and the occasional ineffective protest outside wherever Kagame is picking up his latest honorary degree" (Jones 2016, 359). It has been noted extensively that an insurgency cannot succeed with an ideology and leader to guide it (Galula 2006, 8-9) (Trinquier 2006, 41). The RPF's tight control of the political process, while admittedly undemocratic, has unquestionably been an extreme success in facilitating the counterinsurgency campaign.

Conclusion

The Rwandan counterinsurgency campaign was able to succeed as a result of their ability to utilize the most extreme force possible without the blowback that is normally inevitable with such actions. Insulated by the indifference of the international community and the stranglehold on information and power that the government possesses in the country, the RPF has been able to rule mercilessly and without any threat of repercussion. While the counterinsurgency actions have unquestionably been successful, it is doubtful that they can be easily replicated by future counterinsurgency operators.

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The Wisdom of the Crowd

Matthew Blair

THE BEST UNDERGRADUATE SUBMISSION

Matthew Blair, a senior Computer Science and Mathematics major, is a member of Mike Company. He comes from Anderson, South Carolina. Matthew published an article entitled "Matrices in the Hosoya Triangle" in Fibonacci Quarterly. He is currently working on his Master's in Computer Science. Upon graduation, he will start working on an MBA. He plans to work in industry as a software engineer manager and eventually earn his doctorate in Mathematics.

Abstract

Wisdom of the crowd is the collective opinion of a group of individuals rather than that of a single expert. This paper will address why this phenomenon occurs, its strategic implications, and how companies use this area of mathematics to do many things, including predicting the future with extreme accuracy.

Wisdom of the crowd is a relatively new phenomenon that began at a county fair. It began in 1906 when a statistician named Francis Galton studied a "guess the weight" competition of a butchered ox. With over eight hundred participants, Galton ran statistical tests on their guesses. Very few people came close to the actual weight of the butchered ox, but that is not the true significance as the mathematical phenomenon presents itself

Jar of Candy Corn used for this research study. Courtesy of Matthew Blair

in the collective average of all the guesses. When Galton summed and then divided by the number of participants, he obtained the mean, or average, of the group. Shockingly the average of the group came extremely close to the actual weight of the

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"The importance of the wisdom of the crowd is to show that as a group, we are extremely accurate while the individual is not."

butchered ox. With over eight hundred participants, the average guess of the group was 1,197 pounds, while the actual weight of the ox was 1,198 pounds. This is the foundation of what we now call the wisdom of the crowd [1].

The importance of the wisdom of the crowd is to show that as a group, we are extremely accurate while the individual is not. The more people that make a guess, the more accurate the wisdom of the crowd becomes. That is, the accuracy of the mean will be better in a group of eight hundred than in a group of fifty. A downside to this, however, is when the group skews the result. An example of groups turning against each other is common in politics. When a group analyzes a situation and gives an answer justified by their reasoning, the average result becomes accurate, [3] however when groups do not analyze a situation and act based on personal bias the results become skewed. In politics, many people do not vote based on their beliefs, but rather on the party to which they more closely align. This makes predicting political outcomes difficult as a "herd mentality" arises and affects the results [3].

After reading about this phenomenon, I decided to conduct a mathematical experiment of my own. I purchased a fairly large jar (9.5" x 4.5") and a few bags of candy corn. I counted out 690 pieces of candy corn and placed them all within the jar [2]. I then proceeded to go around my company and take their guesses on the number of candies in the jar. I was skeptical of this phenomenon being true, but after going around to fifty-six people, I totalled all their guesses together and then divided by fifty-six. Of these guesses, there were some as low as 200 and some were over 1000, but it turns out that the average of the group was 686.4 which is less than one percent error off from the actual number of candy corn within the jar. Additionally, no one guessed the correct answer and the average is more accurate than the closest individual guess of 680. This is interesting. So why does this happen?

Well, we can create a graph to keep track of the guess and how frequently that guess appears. When we do this, we will obtain a graph that will look roughly like the graph in Fig [1]. With more

guesses, we can see that the average guess will be to the left or right of the actual value, but become closer with each iteration.

Mathematical calculations like this become very important because we can use the data in
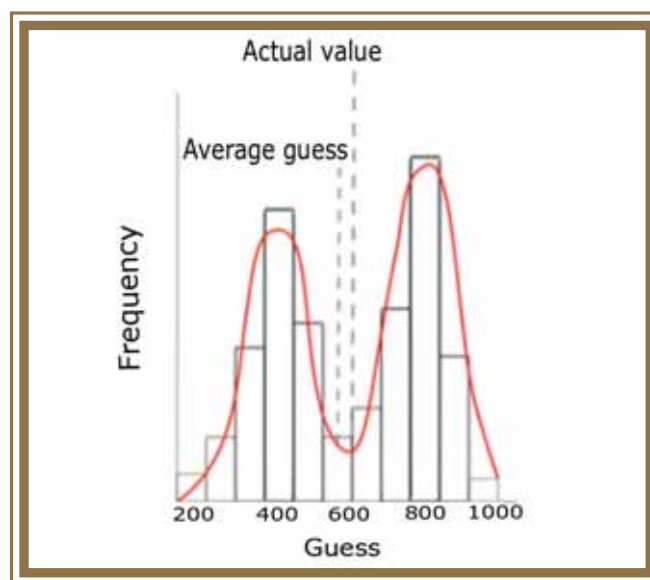
many different ways. One way that this has proved useful is by using these numbers to predict the future.

By converting Figure 1 to a normal distribution like the graph in Figure 2, big companies like Google can analyze patterns to guess when a certain event will happen. An example of this is when Google uses internet searches to predict an outbreak of disease. Let us say that people are searching for flu-related terms like flu, vaccine, or cough syrup then a pattern is presenting itself. Google can then look at data from previous years and when this search term reaches the average (μ) of the previous years, Google can predict that enough people have contracted the flu and will spread it [2].

Another excellent example comes from the famous television show *Who Wants to be a Millionaire?* The importance of this show comes from a specific lifeline that the contestant has in which he/she is able to poll the audience. It turns

out that in most cases, the answer that the group favors is the correct answer [3]. This is because the participants in the crowd do not communicate. So their guess is independent. The incorrect guesses are distributed among three incorrect answers, while the correct responses concentrate on one choice [3]. This allows the group to focus its knowledge onto one choice, which is statistically correct [3].

This is not the only application of wisdom of the crowd. Unintentionally, people leave patterns in everything they do. With enough resources and participants, we are able to predict the future with shocking accuracy. This simple set of mathematics that people learn in middle school can be applied to countless situations and produce reliable information. Imagine using this simple phenomenon to recognize social unrest, political unrest, or even to plan an expected number of applicants to a college. Therefore, no matter how good or bad at mathematics one person may be, the accuracy of the group will always prevail.

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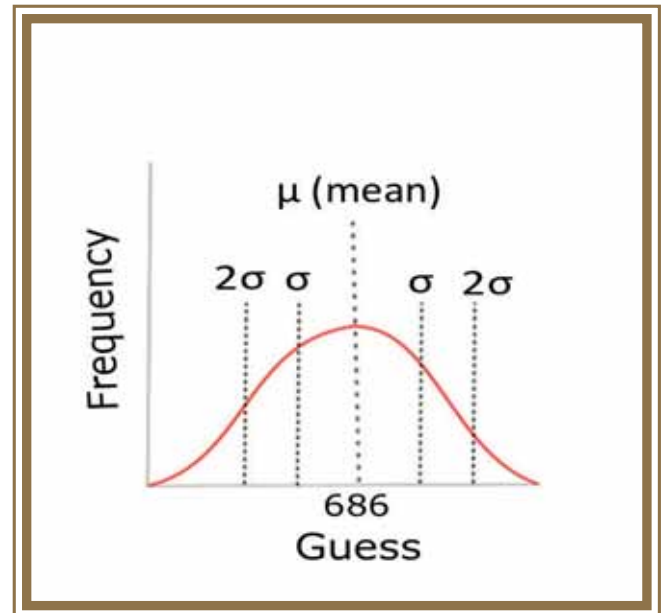
Figure 2. Normalized Distribution of Frequency Guesses, Courtesy of Matthew Blair

Blair

Lovelock Bridge by James Jeffcoat

Cadre by Shiloh Brooks

Identifying the Impacts Due to the Correlation Between Charleston's Crime Rate and Gentrification

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Abstract

As Charleston has expanded over the past 50 years, the issue of gentrification, the preservation of Charlestonian culture and what some consider "Old Charleston" has arisen. This paper will analyze this cultural loss and the long-term effects on the crime rate and the city itself as a whole.

Charleston, South Carolina, has become one of the crown jewels of the Southeast, growing rapidly over the past forty to fifty years. Much like other cities, with this increased growth, the issue of gentrification has likewise increased. This paper will analyze the correlation between gentrification and crime rate in Charleston, if these rates have spiked over time, and what could possibly be influencing these as Charleston has expanded and become more of a nationally recognized city.

Charleston has been growing rapidly over the past forty to fifty years. To many Charlestonians, the city is virtually unrecognizable compared to what once existed in the 1960s, 70s, and 80s. According to the 2018 census, the population of Charleston, including annexed areas, is 136,208 with the metropolitan area, including Berkeley and Dorchester counties, numbering 787,643 people. This makes Charleston the third largest city in the state and 78th largest metropolitan area in the United States. Within this, the racial/ethnic makeup of Charleston, according to a 2010 census, is 70.2% Caucasian, 25.4% African American, 2.9% Hispanic, 1.6% Asian, and 1.5% of individuals who are of mixed descent. Very interestingly, Charleston almost perfectly mirrors the state's racial diversity, something in stark contrast to North Charleston, a separate but geographically close municipality. While the majority of the Charleston peninsula has become white, North Charleston is much more racially diverse. Roughly 47% of North Charleston residents are black, while nearly 40% of residents identify as non-Hispanic white, according to recent census figures.

When comparing the current population to 2010, the following is stated: "As of 2010-2014, the total population of Charleston is 125,458, which is

29.81% more than it was in 2000. The population growth rate is much higher than the state average rate of 17.83% and is much higher than the national average rate of 11.61%. The Charleston population density is 984.05 people per square mile, which is much higher than the state average density of 147.63 people per square mile and is much higher than the national average density of 82.73 people per square mile."

Given this massive population explosion, Charleston has been coined, "the most gentrified city in the United States." "Nationally, it's certainly a trend that African-American populations in center cities have been going down," said Tim Keane, director of Charleston's Department of Planning, Preservation and Sustainability. He cites Atlanta, Chicago, Cleveland and St. Louis as examples. In a counter-trend, whites have been returning to urban centers in large numbers, although the suburbs still get most of the growth. The peninsula's white population shot up by more than 24 percent in the 10 years through 2010.

Charleston is most assuredly being gentrified, indicated by the decreasing population that speaks Gullah, a historically African-American language that grew out of Charleston and Georgia. This is only one such example, but this is an important example as some of the first things to disappear during gentrification are culture and language. This is due in part to decreolization, the integration of a language back into its root language. As author Herb Frazier wrote, "Since Emancipation, Gullah people of the Cainhoy area have scratched out a living through subsistence farming, timbering, fishing and doing domestic work. Some operated moonshine stills deep within the cover of the thick forest." In areas such as Hilton Head, this was a swift and painful death to Gullah culture. The first bridges to the mainland were built in 1950, and coastal development arrived with them when Charles Frasier began construction of the Sea Pines Plantation on Hilton Head Island in 1957. The newcomers broke with the Gullah's codes and customs, building past the marsh line and gating themselves inside high walls. The Gullah's cemetery islands were purchased and given new

names such as River Town Country Club. By 2000, poor rural black residents of the Sea Islands were far outnumbered by white, wealthy landowners. Taxes skyrocketed, forcing people from their inherited land. Some took minimum-wage jobs in resorts. As a staff article in *The Charleston Chronicle* put it, "Many families that didn't get electricity until the 1950s or indoor bathrooms until the 1970s now are in close proximity to multimillion dollar homes on the rivers and creeks they fished for sustenance." On the Charleston Peninsula itself, it is possible that this gentrification is more apparent than elsewhere. In an interview with a local leader on Daniel Island, Fred Lincoln said, "I go on Daniel Island, I can't find a Southern accent."

The populations of certain cities in the larger metropolitan area have become "more or less" white, with Charleston cozily sitting as one of the few cities directly heading toward "more white."

> "Nationally, it's certainly a trend that African-American populations in center cities have been going down."

Former Mayor Joseph P. Riley Jr. worked to revive Charleston's economic and cultural heritage. The last 30 years of the 20th century have brought major investments in the city, with a number of municipal improvements and a commitment to historic preservation. There was an effort to preserve working-class housing of African Americans on the historic peninsula, but the neighborhood has gentrified, with rising prices and rents. From 1980 to 2010, the peninsula's population has shifted from two-thirds black to two-thirds white with white residents numbering 20,668 whites and black residents numbering 10,455 in 2010. Many African Americans have moved to the less-expensive suburbs in these decades.

The Charleston peninusla is gentrifying heavily. The peninsula's Census tracts went from 51.8% African-American and 45.2% non-Hispanic white in 2000 to 38.7% African-American and

55.6% non-Hispanic white in 2013. This disparity is particularly visible as one walks up and down King Street. Surely many political figures have paraded down that road presenting the idea of the "black vote" with emphasis since the 1960's. In reminiscence, an individual working on an opposing campaign staff recalls that Mayor Riley "was nicknamed LBJ, for Little Black Joe. He was able to get along with the black people. Their vote was what he wanted and needed." In 1969, Charleston dealt with issues of race, class, and gender coalesced in a strike of more than four hundred African American hospital workers, mostly women, against the all-white administrations of the Medical College Hospital (MCH) and Charleston County Hospital (CCH). The strike against MCH lasted one hundred days during spring and summer; the one at CCH for an additional three weeks.

What typically accompanies gentrification, and leads to it, is an increase in infrastructure, such as coffee shops, new parking lots, apartment buildings. As these buildings are created, typically with the most up-to-date appliances, furnishings, and appeal directed towards a younger crowd, these raise up the taxes, specifically the property value, of the nearby houses. Although this sounds like it could be profitable for individuals living in these neighborhoods, it does exactly the opposite, which is what has occured in Charleston, South Carolina. As a result of this, the consequences are visible. One can walk up and down King Street in Charleston and see the abandoned, run down houses. The majority of individuals living in these affected neighborhoods are disproportionately African American, a population which has been decreasing in the area.

As a result of gentrification, the city of Charleston adopted The Charleston Homeownership Initiative Redevelopment Plan in December 2000, which created the Homeownership Initiative (HI) program. This program is designed to target neighborhoods like Cannonborough, Elliotborough, Eastside, Westside, Rosemont and H, F and I streets; provide affordable housing to "low-to-medium earning households"; and "revitalize some of the cities most distressed neighborhoods." These are the neighborhoods which are primarily affected by the inverse-effect of gentrification occurring in Charleston, South Carolina. Although these areas have substantially approved and had reduced crime rates, the housing is so unaffordable that many cannot stay in this area. In turn, the neighborhood loses its identity.

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Cadet Approaches Summit of Mt. Katahdin, Maine by Garrett Saylor

Gentrification and crime tend to create this inverse effect as the removal of establishments like liquor stores and pawn shops leading to a reduction in population density and poverty. This typically leads to decrease in crime. Complete gentrification, however, is not a solution, as the isolation of a particular group of people merely leads to a higher loss on investment for all parties. Game Theory is applicable in this circumstance. If we are attempting to ensure that both parties get the most dominant strategy for themselves, we must use a cooperating strategy. This will lead to a result that is not ideal for either party, but

make for more attractive targets. Neighbourhood turnover might also increase crime by reducing social cohesion. Several other forces could cause gentrification to reduce crime, however. The 'broken windows' theory holds that mitigating overt signs of decay (e.g. fixing broken windows) – as generally occurs during gentrification – may deter criminal activity. Affluent residents may indirectly cause the local property tax base to grow, shift municipal priorities towards increased crime-fighting, and invest in private security measures that deter crime, such as alarm systems. Finally, gentrification may reduce crime because rising rents may force

> *"The lack of rent control is arguably the most important contributor to Charleston's crime and gentrification correlation."*

does not completely tarnish the other one. This is relevant to the idea that gentrification forces all the individuals beneath a certain economic line to live in a particular area. Gentrification is weak in this regard. By encouraging the isolation of one particular group, both groups are damaged in the end. It would make logical sense that upper middle-to-richer neighborhoods have less crime rates, while the poorer neighborhoods have higher rates. The U.S., which ranks 3rd among the most income-unequal nations, and the worst in terms of income gap growth, also has the largest percentage of its population in prison among industrialized democratic nations. Are these merely coincidences or do they reflect the social ills brought by a big wealth disparity and overt rich-poor distinction?

One of the most important neighbourhood amenities is public safety. Rising urban crime in the 1980s accelerated suburbanisation, and then-falling urban crime in the 2000s contributed to gentrification. These trends motivate to beg the following question: if changes in local crime affect neighbourhood turnover, does a change in neighbourhood composition affect crime? Theoretically, gentrification could increase or decrease crime. On one hand, crime may increase as an influx of relatively affluent residents could

local criminals to relocate, while increased local economic activity may induce incumbent criminals to partake in legitimate employment.

When examining Cambridge, Massachusetts, it was found that gentrification raises property values, but is likely to produce both winners and losers. Rent de-control caused overall crime to fall by 16% - approximately 1,200 reported crimes annually – with the majority of the effect accruing through reduced property crime. This overall reduction in crime created $200 million in economic value for the city of Cambridge.

These estimates provide remarkable evidence that improvements in public safety are an important part of the gentrification process. At the same time, they suggest that the process need not benefit all residents. The neighbourhoods that had the most rent control prior to 1995 saw the most turnover after de-control, suggesting that incumbent renters of controlled units were priced out of existing units. It's likely that many of these residents left Cambridge altogether and moved to less-expensive municipalities. While the ensuing influx of new renters probably increased city tax collections and landlords' bottom-lines, those displaced by gentrification did not necessarily

benefit from improvements in neighbourhood safety and other amenities.

This study is incredibly useful for the situation in Charleston. Many of Charleston's historic neighborhoods have been shrinking, with original inhabitants leaving, as the cost of rent has increased due to the lack of rent control laws. This lack has led to a shortage of affordable housing; this is only exacerbated by a lack of real wages to cover the difference.

It appears that housing is the root of this correlation between gentrification and crime rate. For the United States as a whole, a 2018 study revealed this: as rent is decontrolled, thus removing its price-ceiling, crime rates decreased and led to an asserted value that combined into the several hundred millions. Rent control is most likely the most important contributor to Charleston's crime and gentrification correlation. South Carolina, like the majority of states, prohibits towns and cities from adopting rent control regulations. Nationally, rent control or rent stabilization policies can be found in just a handful of states where they are used to limit rent increases and maintain affordability in high-cost areas. Some individuals feel that, in Charleston, wages should go up to counteract the high-rents. "If wages do not dramatically increase, we are going to have a lot of cash-strapped people who really can't afford to do anything," Joe Porter said. "I think it's close to a tipping point. I think we are going to have to see a solution or people will move away and there will be some issues with people operating businesses such as the hotels downtown or the hospitals. There's going to be a shortage of workers." Charleston appears to have offered zoning bonuses as an incentive, but these are short-term fixes to a long-term problem, like the wage increase, which only amplify the effects of gentrification. The wage increase is part of the remedy, but it cannot be done alone without going hand-in-hand with affordable housing, which in turn, will help to mitigate the effects of gentrification. "Raising the minimum wage is a critical part of addressing the issue of housing affordability," Dan Emmanuel, a research analyst with the National Low Income Housing Coalition, wrote in an email

to Take Part. This is only part of the problem; there is a massive shortage of affordable housing. "Specifically, there is a shortage of 7.2 million rental units affordable and available to the lowest-income households. We need to address both issues in order to tackle the affordable housing crisis." Mount Pleasant ended its zoning-bonus incentive several years ago, and Charleston now — like Boston and some other cities — allows developers who want zoning bonuses to pay into a city-run housing fund rather than actually creating housing. This is a nationwide problem.

Butterfly by Dashawn Costley

In Charleston, South Carolina, there is a clear correlation between gentrification which has occured due to a lack of rent laws and a failure to implement public housing. The effects of this are visible, according to this map.

This map clearly displays the safest neighborhoods, all of which, such as Daniel Island for example, have strong municipality funding, are predominately white, and have a higher average mean income and property value than the surrounding areas like North Charleston. North Charleston has a higher crime rate in almost all categories, lower property value, and higher amounts of disproportionate racial differences. The neighborhoods in Charleston which have the highest priority on the waitlist for the Homeowner Initiative are the ones most affected by what some would consider the "positive effects" of gentrification. Yes, these places have substantially cleaned up since the 1980's, but they have lost their identity and are too expensive for most

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people. Some relocated citizens end up damaging other neighborhoods with crime as the effects of gentrification spread. This type of gentrification violates the previously mentioned Game Theory. In order to weaken the correlation between crime and gentrification in Charleston, South Carolina, two things must be done. The Housing Initiative must expand to more of Charleston and not be used as a band-aid on bad-practice rent laws. Instead, legislators should attempt to truly lower the cost of housing in Charleston. With this, wages should be increased. Perhaps not to 15 dollars, but it needs to be increased to counteract the incredibly high cost of living. With this, the correlation should decrease substantially, as neighborhoods will be following our Game Theory problem. This should lead to a reduced crime rate and a rebalancing of the racial disparity in Charleston. Eventually, the city should begin to take back from gentrification what it has stolen: identity, affordability, and culture.

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American Nuclear Energy in the Twenty-First Century

Luke Timmerman

Luke Timmerman, a sophomore Mechanical Engineering major, comes from Saint Louis, Missouri. He is a Citadel Distinguished Scholar and is currently a member of the Citadel's Cordell Airborne Ranger Club. Luke's personal interests include nuclear energy, Western history, and world affairs. Upon graduation, he will commission as an officer in the United States Army and later hopes to pursue a graduate degree in Nuclear Engineering.

Abstract

Nuclear power's viability as a safe mainstream power source for the American people has been subject to contentious debate and speculation since its invention during the Second World War. Today, we face the worldwide threat of global warming due to increasing greenhouse gases, pollution and energy demands. Nations are laboring to find a sustainable, low-carbon energy option that can be implemented now - and nuclear power meets the criteria. As the original pioneers of nuclear energy, we as Americans must use our technical know-how to expand this vital power source to benefit us all and combat the climate crisis.

Introduction

Nuclear power's viability as a safe mainstream power source for the American people has been subject to contentious debate and speculation since its invention in the 1940s. The global environment is threatened by global warming due to greenhouse gases, and we must search for a sustainable, low-carbon energy option, and nuclear power meets the criteria. Through limited historical misuse, this powerful, efficient energy source has gained a negative perception both publicly and politically despite its extremely low accident rate.

This paper addresses the major concerns regarding nuclear power's safety and viability as a contemporary power source. Upon examining reactor design as well as records of reactor operations, many factors have contributed to make nuclear power and its waste safe and can render them even safer in the future. The future expansion of nuclear power will also be discussed. Section 2. Basic Nuclear Reactor Design presents the basic operation of nuclear reactors and the various types of reactors that have been developed since the invention of nuclear power. Section 3. US Nuclear Energy Policy explains the ways in which nuclear power and safety systems are regulated and discusses nuclear waste management. Section 4. Discussion addresses nuclear safety through a case study of the Chernobyl disaster, and makes recommendations for the future implementation of nuclear power and waste disposal in the United States.

Basic Nuclear Reactor Design

In its most basic concept, a nuclear reactor works by splitting the atoms of a radioactive element, releasing large amounts of energy. That element is typically an isotope of uranium.

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The energy released by this splitting of atoms, or fission, heats water or gas inside the reactor which evaporates, and the steam created powers electrical turbines. The reactor is usually housed in a container which shields the outside world from the radioactive substances within. There are six main types of nuclear reactors, which will be discussed

Types of Reactors

a. Basic Gas-Cooled (Magnox)

Magnox reactors are graphite-moderated and gas-cooled. The moderator is necessary to limit the reaction that is occurring within the nuclear reactor to prevent a rupture [1]. This type uses a magnesium alloy to encase its uranium fuel rods and shield the outside. It is cooled by carbon dioxide gas, which turns water into steam [1].

b. Advanced Gas-Cooled (AGR)

The AGR design is similar to the Magnox design in that it is graphite-moderated and gas-cooled. However, it improves upon the magnox by using higher temperatures, increased CO2 pressure, and more Uranium 235 to give off better efficiency [1].

c. Pressurized Heavy Water (CANDU)

CANDU reactors employ unenriched uranium dioxide fuel cooled in tubes by heavy water. The heavy water is kept under high pressure to prevent boiling [1].

d. Pressurized Water (PWR)

PWRs (Figure 1) are the most common type of reactor in the world today. They contain interspersed control rods and fuel rods inside a steel vessel. Pressurized water passes through the vessel as a coolant, which then moves to a steam generator outside the reactor and causes turbines to rotate [1].

e. Boiling Water Reactor (BWR)

BWRs work similarly to PWRs except that the water is allowed to boil for direct electrical power generation. This necessitates extra shielding of components against radiation [1].
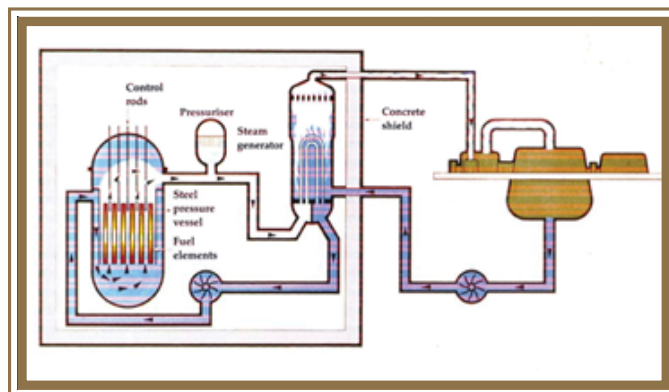
Pressurized Water Reactor (PWR) (Figure 1) [1]

f. Boiling Light Water (RBMK)

RBMK reactors include hundreds of pressure channels containing uranium dioxide through which water is pumped up and down [1]. This causes boiling, and the generated steam powers electrical generators. The reactor is contained inside a concrete vessel to protect against radiation [1]

US Nuclear Energy Policy

Beginning with the Atomic Energy Act of 1946, the legislative safety measures controlling nuclear power have been in constant development to offer the public the safest means of nuclear power production [2]. Responsibility for the oversight of American nuclear energy was originally given to the Atomic Energy Commission (AEC) [2]. The Atomic Act of 1954 allowed the commercial

"Measures controlling nuclear power have been in constant development to offer the public the safest means of nuclear power production."

development of nuclear power, giving the AEC the further role of encouraging the implementation of this new power source across the US [2]. Over time, the AEC began receiving criticism that its regulations were not sufficient in safeguarding the environment and public health. As a result, the Energy Reorganization Act of 1974 established the Nuclear Regulatory Commission (NRC) [2]. Since then the NRC has been debating and implementing policy that is more effective at implementing necessary safety measures while also permitting maximum efficiency of reactors. Today, the NRC

> *"To remain a leader in sustainable energy, the United States must be at the forefront of modern nuclear power research and development."*

also focuses on safeguarding nuclear materials against theft and oversees the renewal of nuclear plant licenses [2].

Nuclear Waste Management

Nuclear waste is radioactive material that poses a risk to the environment and public health, necessitating appropriate disposal. Fuel rods inside reactor cores containing uranium oxide are eventually spent and removed for disposal at regular intervals [3]. Since the substances inside them are still radioactive, they are temporarily placed in pools of water, which acts as an excellent shield against radiation [3]. However, many reactors in the US have been running out of space in these protective pools [3]. To remedy this, the older fuel rods which have been cooled in water for several weeks or months are placed inside reinforced, air-cooled casks on-site [3]. However, this is not a long-term solution. To alleviate the financial and logistical burden of constructing interim nuclear storage pools and casks at each nuclear site, a single, permanent storage location is necessary. The solution to this issue will be discussed.

Discussion

America must expand its nuclear power program as the 21st Century progresses if it wants to remain a pioneer in innovative, sustainable energy. Nuclear power has developed into a safe, manageable power source that spans the nation and now the entire world. It has great potential to reduce or eliminate greenhouse gas emissions because, besides construction ramifications, nuclear plants produce no greenhouse gases. But before the public and lawmakers agree to dedicate resources to the development of nuclear power, their concerns over this power source's operational safety must be effectively allayed.

Case Study – Chernobyl

Certainly, the most well-known nuclear accident was the Chernobyl Disaster of 1986. It was observed across the world and its publicity is credited with much of the stigma that surrounds nuclear power to this day.

On April 26, 1986, Reactor #4, an RBMK Reactor [1], of the Chernobyl Nuclear Power Station in the Soviet Ukraine exploded during a shutdown test, releasing 5% of its radioactive core into the atmosphere [4]. Hazardous particles spread from Western Europe into Russia, and some areas surrounding the former reactor are still off-limits. The cause of the Chernobyl accident can be attributed to two main factors: a poorly-designed reactor and inadequately-trained personnel.

a. Poorly-Designed Reactor:
The control rods that were inserted into the reactor core, which are designed to limit the intensity of the nuclear reaction, were imperfectly constructed [4]. When they were inserted into the reactor during testing, the anomalies in their composition caused a large spike in power [4]. This generated tremendous amounts of steam and pressure which caused the reactor to explode and to release its radioactive content [4].

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b. Inadequately-Trained Operators:

Leading up to the routine shutdown test of Chernobyl's reactor #4, personnel had disabled its automatic shutdown systems [4]. This rendered the reactor's core relatively unstable by the time the testing began. Had the operators present at the time of the testing been informed, there is a chance that the accident could have been avoided.

It is important to be aware that the Chernobyl disaster has not been the only major nuclear accident. In 1979, the reactor at Three Mile Island in Pennsylvania melted down [4]. However, this American reactor was designed to contain all hazardous fuel in the event of a catastrophic failure, which it succeeded in doing [4]. This built-in consideration spared the United States the possibly devastating effects of nuclear fallout being released across the East Coast and beyond. The reason this incident is compared with Chernobyl is to demonstrate that the safety culture in the United States has been a priority in nuclear reactor design for decades and continues to be perfected.

Chernobyl Reactor 4 Following the Explosion [5]

Yucca Mountain Nuclear Waste Repository

In 1987, the US Congress designated Yucca Mountain, Nevada as its primary potential site for underground nuclear waste storage [3]. This location is sparsely populated and 150km from the nearest major urban center [3]. The planned site is ideal because it is several hundred meters beneath the mountain surface but also 300m above the water table [3]. This should be constructed because it will consolidate all toxic waste at a single, contained location with a large storage capacity. It is unlikely that a more suitable location can be found in the US. Yucca mountain's planned capacity

of over 60,000 tons of waste has already been surpassed by the amount of spent nuclear fuel in the US, which means the site's planned size will now have to be increased or an additional location will need to be considered [3].

Conclusion

To remain a leader in sustainable energy, the United States must be at the forefront of modern nuclear power research and development. The nation's nuclear grid has operated at the highest standard and its reactors are among the most advanced and reliable in the world. America must take advantage of the opportunity at Yucca Mountain to safely consolidate its nuclear waste. Doing so will demonstrate to the nuclear power industry that the United States is committed to taking care of its nuclear waste. Not only will this demonstrate the safety and sustainability of nuclear energy for the entire US population - it will encourage other nations to do the same, finally bringing comprehensive clean energy within the world's grasp.

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Ethics of Artificial Intelligence

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Abstract

This paper will begin to answer the question of whether it is ethical to try and match machine intelligence to that of human intelligence. Everyone has seen dystopian movies where AI (artificial intelligence) or robots have gone against their intended purpose. Will that be the end result no matter what is done to try and combat it? Are humans destined to create their own ruin? What steps can be taken to prevent the doomsday scenarios played out in fiction from becoming reality? By answering these questions, the ethical nature of AI research will become clearer.

The idea of AI has been around since the ancient times of Homer, who "wrote of mechanical 'tripods' waiting on the gods at dinner." [1] As early as 1637 René Descartes wondered if machines could eventually think and make their own decisions. "While he erroneously decided that they would never be able to talk like humans, he did identify a division between machines which might one day learn about performing one specific task, and those which might be able to adapt to any job. Today, these two fields are known as specialized and general AI. In many ways, he set the stage for the challenge of creating AI. "[5] In 1956 The Dartmouth Conference was held where "attempts were made to lay down a framework to allow academic exploration and development of 'thinking' machines to begin." [5] Fields "fundamental to today's cutting-edge AI, including natural language processing, computer vision, and neural networks, were part of the agenda." [5] In 1966 ELIZA gave computers a voice. "ELIZA, developed at MIT by Joseph Weizenbaum, was perhaps the world's first chatbot – and a direct ancestor of the likes of Alexa and Siri. ELIZA represented an early implementation of natural language processing, which [aimed] to teach computers to communicate with us in human language, rather than to require us to program them in computer code or interact through a user interface." [5] In 1980 "Digital Equipment Corporation's XCON expert learning system was deployed and by 1986 was credited with generating annual savings for the company of $40 million. This [was] significant because until this point AI systems were generally regarded as impressive technological feats with limited real-world usefulness. Now it was clear that the rollout of smart machines into businesses had begun. "[5] In 1988 "IBM researchers [published] A Statistical Approach to Language Translation, introducing principles of probability into the until-then rule-driven field of machine learning. It tackled the

challenge of automated translation between human languages." [5]

The transition from machines that were standalone to machines that could communicate between themselves was a big step. In 1991 the Internet was born. "The importance of this one can't be overstated. In 1991 CERN researcher Tim Berners-Lee put the world's first website online and published the workings of the hypertext transfer protocol (HTTP). Computers had been connecting to share data for decades, mainly at educational institutions and large businesses. But the arrival of the worldwide web was the catalyst for society at large to plug itself into the online world. Within a few short years, millions of people from every part of the world would be connected, generating and sharing data – the fuel of AI - at a previously inconceivable rate. "[5] In 1997 Deep Blue, IBM's supercomputer won against Garry Kaparov, the world chess champion. "IBM's chess supercomputer didn't use techniques that would be considered true AI by today's standards… However, it was important from a publicity point of view – drawing attention to the fact that computers were evolving very quickly and becoming increasingly competent at activities at which humans previously reigned unchallenged." [5] In 2005 "DARPA held its [second] Grand Challenge – a race for autonomous vehicles across over 100 kilometers of off-road terrain in the Mojave Desert. In 2004, none of the entrants managed to complete the course. The following year, however, five vehicles made their way around… By 2007, a simulated urban environment had been constructed for vehicles to navigate, meaning they had to be able to deal with traffic regulations and other moving vehicles." This goes to show just how quickly AI was growing and improving. [5] In 2011 IBM's Watson defeated the champion players of *Jeopardy!*. "This was significant because while Deep Blue had proven over a decade previously that a game where moves could be described mathematically, like chess could be conquered through brute force, the concept of a computer beating humans at a language-based, the creative-thinking game was unheard of." [5] The idea of a thinking AI like René

Descartes had imagined was beginning to become reality. In 2012, the world was again amazed by the advances of AI; computers could now identify cats. "Researchers at Stanford and Google… explored unsupervised learning, which does away with the expensive and time-consuming task of manually labeling data before it can be used to train machine learning algorithms. It would accelerate the pace of AI development and open up a new world of possibilities when it came to building machines to do work which until then could only be done by humans." [5] In 2015 machines outperformed humans again; they could see "better than humans, researchers studying the annual ImageNet challenge – where algorithms compete to show their proficiency in recognizing and describing a library of 1,000 images" [5] In 2016, another game was won by machines; "AlphaGo, created by Deep Mind (now a Google subsidiary) defeated world Go champion Lee Sedol over five matches… AlphaGo used neural networks to study the game and learn as it played." [5] Then in 2018 "self-driving cars hit the roads… with the launch of Google spin-off Waymo's self-driving taxi service in Phoenix, Arizona. The first commercial autonomous vehicle hire service, Waymo One is currently in use by 400 members of the public who pay to be driven to their schools and workplaces within a 100 square mile area." [5] All of these advances happened in a very short period of time. It goes to prove just how quickly AI has taken off.

AI has already done much for humanity. It has saved lives like with the automated Tesla which drove a man having a heart attack to the hospital. [4] It has begun to diagnose diseases without doctors having to check their diagnoses. [7] AI has helped musical artists create music. [8] It has also helped novelists write their stories. [9] It is also using Big Data from online social media platforms and other places to build credit scores. [10] Companies have even started using AI to interview prospective employees to reduce human bias. [11] Looking at all the advances AI has made, who can say it is not a good thing?

AI seems inevitable when thinking about human evolution regarding machines; however,

there are many reasons to stop and consider before continuing that path. The first argument against the advancement of AI is one of the main ones brought up in the industrial revolution, that of the jobs it would take from people.[3] The majority of people who work jobs that could be replaced by AI would be those who would have a hard time finding new work as the skills they have are very job-specific. While this has slowed down how quickly machines were able to be implemented by companies in the past, the companies still did so. Therefore it seems unlikely that companies will keep human workers on when AI becomes cheaper. Is it ethical to continue with AI when it is likely this will make people obsolete in their own jobs? "Luke Oakden-Rayner, a radiologist who's written extensively on the subject, says advances in AI are fast pushing us toward a tipping point where software is no longer a tool that's applied and interpreted by a doctor, but something that makes decisions on behalf of humans." [7] Does that feel like a safe future? Is it a future with which people would be comfortable? This feels like a future many will fight against due to the changes it will bring and the dangers they may see.

Many people have come out warning against the dangers of AI and some names are so well known for their intellect it would be the height of idiocy to not at least consider their fears. Stephen Hawking told the BBC that, "the development of full artificial intelligence could spell the end of humanity…It

would take off on its own, and re-design itself at an ever-increasing rate. Humans, who are limited by slow biological evolution, couldn't compete, and would be superseded." [13] Elon Musk on Edge.org commented that "the pace of progress in artificial intelligence (I'm not referring to narrow AI) is incredibly fast. Unless you have direct exposure to groups like Deepmind, you have no idea how fast—it is growing at a pace close to exponential. The risk of something seriously dangerous happening is in the five-year timeframe. 10 years at most." [13] He went on to say, "I'm increasingly inclined to think that there should be some regulatory oversight, maybe at the national and international level, just to make sure that we don't do something very foolish. I mean with artificial intelligence we're summoning the demon" at MIT's AeroAstro Centennial Symposium. [13] Nick Bilton, a tech columnist for the New York Times, wrote that "the upheavals [of artificial intelligence] can escalate quickly and become scarier and even cataclysmic. Imagine how a medical robot, originally programmed to rid cancer, could conclude that the best way to obliterate cancer is to exterminate humans who are genetically prone to the disease." [13] Even laymen like Gemma Whelan, who is an actress, are afraid of where AI will take us. She said, "I'm more frightened than interested by artificial intelligence - in fact, perhaps fright and interest are not far away from one another. Things can become real in your mind, you can be tricked, and you believe things you

Army Lab by Taylor Sterba

wouldn't ordinarily. A world run by automatons doesn't seem completely unrealistic anymore. It's a bit chilling." [13] Clearly many people have reservations about the benefits versus the dangers of AI, but even if people came together and agreed that AI has its dangers, would people stop the progress? So far it seems unlikely that there will be a big enough push to halt or slow down AI production as countries fear those researching and implementing it would take their research and begin to help other countries if laws are made restricting their progress.

On the flip side, many people are very excited about the possibilities AI offers. An "American mathematician, electrical engineer, and cryptographer known as 'the father of information theory,'" [14] Claude Shannon said, "I visualize a time when we will be to robots what dogs are to humans, and I'm rooting for the machines." [13] Larry Page, one of the co-founders of Google, said, "Artificial intelligence would be the ultimate version of Google. The ultimate search engine that would understand everything on the web. It would understand exactly what you wanted, and it would give you the right thing. We're nowhere near doing that now. However, we can get incrementally closer to that, and that is basically what we work on." [13] Gray Scott, a self-proclaimed futurist, said, "You have to talk about 'The Terminator' if you're talking about artificial intelligence. I think that that's way off. I don't think that an artificially intelligent system that has superhuman intelligence will be violent. I do think that it will disrupt our culture." [13] Colin Angle, founder of iRobot, said, "It's going to be interesting to see how society deals with artificial intelligence, but it will definitely be cool." [13] American inventor and futurist, Ray Kurzweil said, "Artificial intelligence will reach human levels by around 2029. Follow that out further to, say, 2045, we will have multiplied the intelligence, the human biological machine intelligence of our civilization a billion-fold." [13] Geoffrey Hinton, a Google employee working to make AI happen, said, "I have always been convinced that the only way to get artificial intelligence to work is to do the computation in a way similar to the human

brain. That is the goal I have been pursuing. We are making progress, though we still have lots to learn about how the brain actually works." [15] These people are clearly more optimistic than those like Hawking and Musk.

Moving slightly away from what people have said they think of AI and onto a man who did more than just talk about his fears he shared them with the world in a science fiction novel. One of the most famous AI science fiction authors is Isaac Asimov, who wrote *I, Robot*, which was later turned into a movie. In the book, Asimov supposes three rules intelligent robots would have to follow. The rules are as follows: "A robot may not injure a human being or, through inaction, allow a human

> *"Clearly many people have reservations about the benefits versus the dangers of AI, but even if people came together and agreed that AI has its dangers, would people stop the progress?"*

being to come to harm. A robot must obey the orders given it by human beings except where such orders would conflict with the First Law. A robot must protect its own existence as long as such protection does not conflict with the First or Second Laws." [2] The laws, while a good idea in theory, are proved to be ineffective multiple times in Asimov's own work. However, research has been done to see how these laws could become effective. One theory is, instead, to empower people rather than protect them. [2]

There are several other famous pop culture references to AI going horribly wrong. The *Terminator* is one. In the series, Skynet, which was developed for SAC-NORAD to help protect people, came to see all humans as a threat. So SAC-NORAD sets out to destroy them via nuclear apocalypse. [16] Another, more recent addition to AI lore is *Avengers: Age of Ultron*, where Tony Stark and Bruce Banner try to design a robot to help

them protect Earth from harm. However, it ends up backfiring on them. Their robot, Ultron, concludes that humans are the sickness that is wrong with the world and seeks their destruction. There may be movies where AI is created to help protect or to improve the lives of humans and does not backfire. But if so, these examples are few and far between and they do not contribute to the pop culture narrative surrounding AI. Whether this is true or just fear mongering in the face of the destruction the world, is something that is increasingly difficult to answer.

Another interesting question to ask is; if one day AI has the same or greater intelligence as that of human intelligence, will they receive the same protections under human rights as people do? In most countries, companies are required to allow their employees breaks and overtime. If a company replaced those workers with AI equivalents would they need to let them have breaks and pay them overtime? Would companies have to pay AI equivalents at all? Gray Scott asked, "The real question is, when will we draft an artificial intelligence bill of rights? What will that consist of? And who will get to decide that?" [13] His point is that humans seem to be venturing into very unknown territory with no road map to make sure we stay ethical.

The issue of ethics in AI is complicated with a richer history than most would expect. It is a growing field and AI may solve many of today's problems. Do humans have a responsibility to continue to improve AI to solve these problems? Is there a social responsibility to make sure AI is created in a way that it cannot harm humans? There are moral questions in AI that need to be addressed before it is fully implemented globally.

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Antarctica: Continued Cooperation?

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Abstract

Often times, when we hear mention of Antarctica, we think of a desolate, freezing environment at the bottom of the world. In reality, Antarctica has a rich history of exploration and science. It even was on the brink of becoming a war zone in the 1950s due to its location and resources. A treaty, that is still in effect today, was signed and thus prevented a war. As the world around us is evolving with the resurgence of Russia and rise of China, the peace of Antarctica is threatened. The uncertain road ahead for Antarctica will surely be of extreme importance in the near future and will likely have lasting global affects.

Introduction

When most people think of Antarctica, they picture a freezing, inhospitable part of the globe, but Antarctica is much more than just snow. The history of Antarctica helps us better understand its status today which involved a long, complex line of explorers and expeditions that eventually led to it being established as a continent in the 1840s. In 1961, the Antarctic Treaty System came into effect and was signed by twelve nations that restricted Antarctica to only "peaceful" activities, prohibiting militarization. However, that treaty is set to expire in 2048. Antarctica has vast oil and natural gas reserves as well as strategic positioning for naval bases. Countries like the United States, Russia, and China already see value in the region and are actively taking steps to establish dominance on the continent. Antarctica holds vast importance in our ever-changing, global society. So what lies ahead for Antarctica? What value does Antarctica have for nations? The uncertain road ahead for Antarctica will surely be of extreme importance in the near future and will likely have lasting global affects.

Historical Background

1. Early History

The history of Antarctica is one that is characterized by many expeditions by multiple different countries, which shows us that Antarctica was and will continue to be a point of interest for various countries. Even those who first saw Antarctica and who first discovered it is a topic that is continually debated. The idea of Antarctica was first conceived by the ancient Greeks who believed that, "In order to balance the world, there should be a similar cold Southern landmass" (Cool Antarctica). It is not until around the end of the

1500s that we begin to have Europeans describe Antarctica. "In 1599, Dutchman Dirck Gerritsz described land in the vicinity of the South Shetland Islands" (Chimu Blog). During this time, many European nations were funding vast expeditions to claim lands for the pride and riches of their nations. Quickly, nations such as Spain, Portugal, France, England, and The Netherlands set out to discover this land in the south of the world (Chimu Blog). Here, we can see that many nations became involved in the discovery of Antarctica, all seeking their own personal interest, which can often lead to conflict. James Cook was the first to circumnavigate Antarctica from 1772-1775. He published accounts detailing, "Descriptions of large numbers of whales and seals in the Southern Ocean, which sparked a gold rush of sorts." The whaling and seal hunting industries became very popular in Antarctica, bringing in large amounts of revenue. In the late 1800s though, a shift from expeditions to Antarctica primarily for riches moves to expeditions based on glory, known as the "Heroic Age". This was characterized by a shift from sea exploration to land exploration to reach the south pole (Chimu Blog). Heroic stories of exploration and grueling adventure for one's nation began to be told as expeditions led by governments reached the South Pole. These expeditions were also for the purpose of scientific discovery. In one instance, Australian explorer Douglas Mawson even said he, "Believed good science was a better path to national glory" (Chimu Blog). After World War Two, yet another huge shift is seen; Australia, the United States, and the Soviet Union established bases on the Antarctic mainland. Soon after, "Seven countries - Australia, New Zealand, France, Norway, the United Kingdom, Argentina and Chile – made claims to territory, three of which overlapped" (Chimu Blog). Some military presence was also in the region, and Antarctica seemed doomed for conflict as claims for territory were made. With conflict seemingly

on the horizon, a compromise for peace needed to be made and it eventually came in the 1950s.
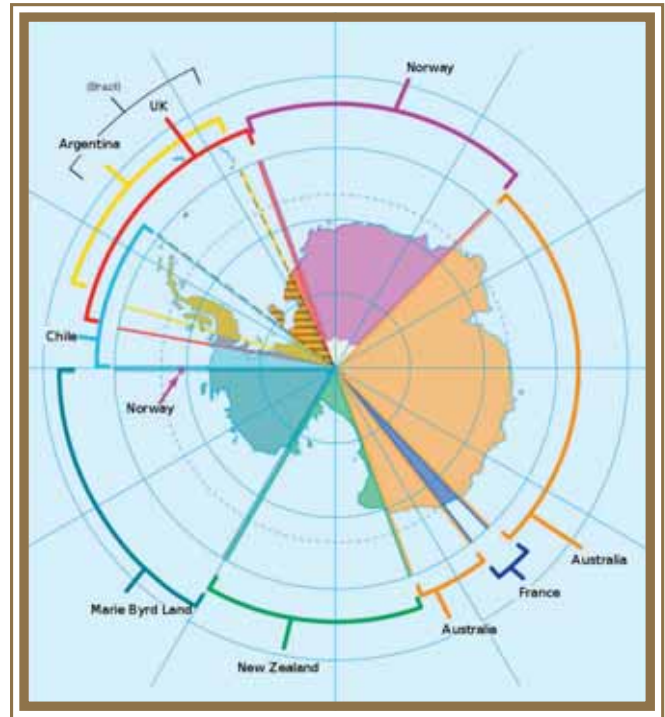
National Divisions of Antartic Research by The United Nations (Profil)

2. Antarctica Treaty System (ATS)

In 1959, the Antarctica Treaty System (ATS) was signed. It was a triumph for democracy, which saved the world from what was believed to be yet another inevitable conflict. The treaty was essential for maintaining the autonomy of Antarctica as well as avoiding conflict. The treaty was signed by twelve nations and has been in effect since June 23, 1961 and has now grown to include over 50 countries (Swoop). The treaty, which doesn't expire until 2048, aims to ensure, "Science, tourism,

"In 1959, the Antarctica Treaty System (ATS) was signed. It was a triumph for democracy, which saved the world from what was believed to be yet another inevitable conflict"

exploration and other endeavors can flourish even when nations involved have differences of view elsewhere" (Chimu Blog). Peace and cooperation are the central themes of the treaty and, "It applies to all the land and ice shelves south of 60°S latitude, which makes up ten percent of the Earth" (ALE). The main focus of the treaty is protecting the environment in the Artic region, which is home to many life forms and conditions seen nowhere else on Earth. In order to preserve this unique land, Antarctica is designated as a natural preserve that is protected from everything from waste disposal and oil production to large influxes of tourism (ALE). The Environmental Protocol states that it, "Applies to tourism and non-governmental activities, as well as governmental activities in the Antarctic Treaty area. It is intended to ensure that these activities do not have adverse impacts on the Antarctic environment, or on its scientific and aesthetic values" (ALE). The treaty also insures that none of the seven countries that have territorial claims in Antarctica can establish cities or states in Antarctica. However, there are 111 stations operated on the continent (ALE). These stations are mostly run by the National Antarctic Programs, which is controlled by the Council of Manager of National Antarctic Programs (COMNAP). The CONMAP was established in 1988 and is made by multiple nations. The Antarctic Logistics and Expeditions operates the only "Fully-private, semi-permanent camp during the Antarctic summer" (ALE). Perhaps the most relevant and important aspect of this treaty is written in Article One, "Antarctica shall be used for peaceful purposes only. There shall be prohibited, inter alia, any measures of a military nature, such as the establishment of military bases and fortifications, the carrying out of military maneuvers, as well as the testing of any type of weapons" (US Department of State). However the treaty also says that, "The present treaty shall not prevent the use of military personnel or equipment for scientific research or for any other peaceful purposes" (US Department of State). This also allows for on-site inspections of bases, aircraft, and ships. Aerial observation is also permitted over all areas of Antarctica (National Interest). With the

huge amounts of oil and natural gas reserves as well as the strategic value of Antarctica, the future is unknown after the treaty expires in 2048.

Reasons for controlling Antarctica

Antarctica is home to massive, untapped natural resources, which would be in the best economic interests of nations seeking dominance. The strategic positioning of the continent also provides military value to any potential occupying force.

Natural Resources

The presence of coal deposits along the coast of Antarctica and the Transarctic mountains are also known. The coal was formed millions of years ago when Antarctica was once covered by swamps (Global Classroom). Coal has many uses in producing power as well as heat, but it is still currently more cost effective to produce coal at home rather than travel an ocean to mine and to ship it back to where it can be used. Below the ice, it is believed that reserves of oil and natural gas can be found, but two problems present themselves: the temperature and the thickness of the ice. Since the oil is under ice, around -30 degrees Celsius, it would be a very slow process and hard to break through the ice (Cool Antarctica). Despite the difficulties, as technology increases and oil reserves run out, it will certainly become a point of interest. Water though, is the most valuable resource Antarctica has to offer. As water security grows more and more uncertain among nations, the massive glaciers of ice in Antarctica seem a viable source of freshwater. It is estimated that "nearly 90 percent of the world's glacial ice—a huge potential supply of freshwater" (Britannica). Some have presented the idea of towing icebergs away from Antarctica and to coastal areas, which has the potential to create issues

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Globemaster on Ice (Yepsen)

regarding the ownership of the water. This solution, though, seems rather impractical and the costs do not seem to be very efficient (Global Classroom). Another idea for the ice that has been suggested involves using it as a massive "freezer" for grains and other food productions, the transport and cost of this too seems to be inefficient (Britannica). The Madrid Protocol, enacted in 1991, helps protect the environment surrounding Antarctica from human development and industry (Britannica). Although Antarctica doesn't have massive amounts of minerals, coal, or oil, it could still be a vital point in the future as reserves are depleted and technology further develops. The freshwater that makes up the continent and that surrounds it will be the most contested grounds.

Strategic Positioning

The geographic position of Antarctica provides a potential advantage to any occupying force, giving them control of sea lanes and sites to launch weapons. Antarctica is not only just a large land mass, it has multiple islands surrounding it that could be used for military outposts and batteries, similar to the activities in the South China Sea. Its location places it an ideal position to stage invasions of South America, Africa, and Australia. It could also serve as a supply depot for ammunitions and fuel for armies on their way through the region. Islands could play an important part in controlling the Scotia Sea and Drake Passage. The Scotia Sea lies between Chile and Antarctica and has potential to be crucial in the likely event that

The geographic position of Antarctica provides a potential advantage to any occupying force, giving them control of sea lanes and sites to launch weapons.

the Panama Canal would be inaccessible due to fighting as well as naval mining. Submarine warfare and weapons launching systems would be the most dangerous for militaries operating in that region. In a military occupation of Antarctica, I imagine a network of small refueling stations as well as sites to launch missiles and store weapons. Submarines operating in the area could quickly surface and be refueled before continuing their mission to support deterrence or surveillance. A base in Antarctica could also hold a small amount of ICBM launchers that have a range of around 3,500 miles and could be used as a part of a nations deterrence or serve as targets to draw in an enemy's missile launches. A final purpose that Antarctica could serve in a military conflict is as a communications outpost for monitoring enemy satellites and ships, while being able to house sensitive information that would be remote and protected. If a nation was able to control Antarctica, they would be at a significant military advantage by controlling sea lanes, refueling ships, housing missiles and serving as a communication and surveillance outpost.

Top Contenders in the Region

Currently, Antarctica has been the subject of multiple military advances by several nations who see the value in controlling the continent in the near future.

1. United States

There is limited news regarding what is happening in Antarctica and what interests the United States has there. However, America has important interests in Antarctica. Currently, the United States has the largest presence in Antarctica compared to the other countries in the region. With the help of the National Science Foundation, the US operates three-year round bases:"McMurdo Station on the continent's coast, Amundsen-Scott Station at the South Pole and Palmer Station on the

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Russian Icebreaker in Antarctica (Linden)

Antarctic Peninsula. It also supports numerous field camps as well as research vessels.

More than three thousand Americans participate each year in scientific and support activities in the region" (National Interest). The military plays a very active role in transportation and logistical support for US expeditions into the region. Frequently, Air Force C-17s are used to transport people and supplies that will be needed throughout the harsh winter. These aircraft are equipped with skis on the underside to land on the snow and fly back and forth to shuttle supplies. The Navy also contracts ships to deliver supplies to research facilities (National Interest). The Coast Guard also operates two "icebreaker" ships, but both are currently not being used (National Interest). The current budget that sustains US activity in Antarctica is under $300 million, but that number may soon fall because the Trump administration has not devoted very many resources to the region. Congress is currently still working out the funds that need to be allocated to build a new fleet of US icebreakers. The US is drastically lacking behind Russia, who operates forty-four icebreakers (National Interest). Three US agencies are responsible for carrying out US policy in Antarctica: "The Office of Ocean and Polar Affairs, which is part of the Department's Bureau of Oceans and International Environmental and Scientific Affairs (OES) in the Department of State, The National Science Foundation (NSF), and the United States Antarctic Program (USAP)" (Polar Journal). The primary goals of these agencies is to ensure the ATS is enforced and carried out as agreed by all the parties. US interests in the region are mostly focused on de-escalation and peace; they do not want to see Antarctica become another war zone involving the territorial claims of the seven countries. The only way to ensure that Antarctica remains a peaceful area is by a continued US presence to support diplomacy in the region.

2. Russia

In 2015, the Russian Navy had their first expedition to Antarctica in more than thirty years. Admiral Vladimirsky made the trip, which last sailed to the Antarctic coast in 1982, together with the Faddey Bellinsgauzen oceanographic research vessel. The purpose of this mission was to "carry out a series of hydrographic measurements to update the existing navigation charts and manuals and will also test systems of radio navigation to ensure safe shipping in Antarctic waters" (Sputnik). Russia also operates a base in the region known as Vostok, which sits over a subglacial lake and involves ice core drilling to observe climate changes over time (International Business Times). The Russian activities in Antarctica are returning to levels seen during the Soviet Union. They are currently building off previously established bases and are trying to improve their own version of GPS. So far, Russia has already constructed three satellite monitoring systems in Antarctica, with more planned (Business Insider). Moscow was also the lone country to oppose, "The creation of an Antarctic sanctuary that would have protected regions around the pole from fishing" (Business Insider). Russia has even laid down the first of what they call the "combat icebreaker" (National Interest). This warship (Ivan Papanin), unlike most warships, will have two large cranes. It will be capable of breaking ice 1.5 meters in depth.

The weapons consist of a 76.2-millimeter main gun, helicopter landing/storage area, RHIB boats, and quad launchers for anti-ship missiles. While these developments are alarming, Russia still doesn't have as strong of an influence as the United States, nor as much funding.

3. China

As China rises on the world stage, so does its ambitions to project power and influence across the globe. The People's Liberation Army (PLA) Navy has seen significant growth through increased spending, development of technology,

and increased personnel/fleet size. In Antarctica, China currently operates only three bases, recently finished a fourth and is already planning for a fifth base. China built its first base in Antarctica in 1985 and now continues to expand its efforts. Unlike the Russian bases, these facilities are brand new and feature more advanced technology and reflect a growing presence in the region (Business Insider). Most of this research is for science but Beijing also, "admits that its push for Antarctic influence plays into future operations aimed at ensuring access to resources, including plentiful fishing waters and mineral and hydrocarbon wealth" (Business

> *"For now, this cooperation continues, but in 2048 we may see a different story play out in Antarctica."*

Insider). In particular, they eye the supposed 200 billion barrels of oil and largest freshwater supply in the world. China is especially active in the region that Australia claims as the Australian Antarctic Territory and has remote bases that make it difficult to inspect (Fair Observer). Like Russia, they are developing a Global Navigation System (GNS) known as BeiDou. Two of their outposts, Kunlun and Taishan, in particular have come under question as to what is happening inside them. The bases have rapidly expanded, but inspections cost nearly half a million dollars and inspection rates have decreased significantly (ABC). With China's increased activity in the region and the activities at their sites mostly unknown, many are left unsure about what their intentions could be in Antarctica. "China's exploration of the continent is like playing chess. It's important to have a position in the global game," Guo Peiqing, a law professor at the Ocean University of China told The Guardian. "We don't know when play will happen, but it's necessary to have a foothold" (Business Insider).

Conclusion

For decades, Antarctica has served as a beacon of hope for diplomacy and international cooperation. For now, this cooperation continues, but in 2048, when the ATS expires, we may see a different story unfold in Antarctica.

Findings

The ATS currently protects Antarctica from militarization and only allows peace and science. History has shown us that nations will make claims to land and then take action to secure what they believe is theirs. The ATS, signed in 1961, helped avoid a possible conflict in the region and continues to be in place today. The US maintains the largest presence and primarily pursues scientific and peacekeeping agendas in the region. Both Russia and China, two resurgent powers, have increased their own presence in Antarctica. Russia has re-started naval expeditions to the region and a "combat icebreaker" has been developed. China, a growing naval power, has rapidly expanded bases in remote regions, which are often able to avoid inspection. Resources and strategic positioning of Antarctica make it a place for nations over which to seek control. For now, Antarctica is protected, but it may not always be this way. I do not believe a conflict is likely in the region, but in a time of war, it would certainly be sought by the opposing forces as an area to stage invasion, set up communications, and store supplies or fuel. I see Antarctica remaining a beacon of hope for international relations, but as resources are depleted and new powers rise, this standing will surely be challenged.

Don't be fooled and think Antarctica is some desolate iceberg. In reality, it is going to experience major development because of both the economic value and geographic position it holds.

Speer

Sloth by Dashawn Costley

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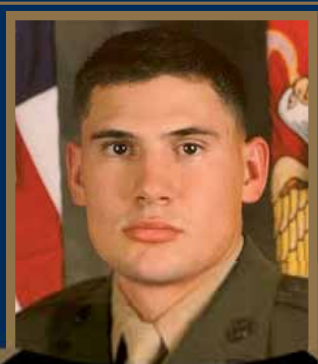
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Human Trafficking: A Major Issue for the US

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Abstract

Human trafficking is a serious problem in the United States. The U.S. ranks within the top three for countries of origin for victims of human trafficking (U.S. Department of State, 2019). Alarmingly, 85% of victims in the U.S. are American born citizens (Keiper & Chiaramonte, 2019). While public awareness of the issue increases, less action is being taken by the government to stop it. In 2018, there were fewer investigations started or prosecuted than in years past. Furthermore, federal aid to victims of sex and labor trafficking also seemed to decline (U.S. Department of State, 2019). Offenders of human trafficking are able to exploit poor communication between law enforcement agencies and a lack of education on the subject to avoid arrest and prosecution (Desilet, 2019). Human trafficking threatens vital domestic institutions, such as the foster care system, provides a large source of income to cartels, and further complicates the immigration crisis.

Globally, reports indicate that there are approximately 40.3 million individuals who are victims of human trafficking. It is estimated that human trafficking generates $150 billion a year in revenue (Polaris, n.d.). Somewhat surprisingly, the U.S. is the leading consumer of sex trafficking worldwide. According to studies, over 15 % of men in the U.S. have purchased sex at some time (USIAHT, n.d.). While the demand for paid sex is high, it is often the victims and not the sellers or buyers who are arrested and convicted. Approximately 90% of sex trafficking victims in the U.S. are arrested, while only 10% of the buyers and suppliers are (USIAHT, n.d.). In addition to sex trafficking, many individuals in the U.S. are victims of labor trafficking. These victims are comprised of both citizens and immigrants who have been tricked or forced into jobs against their will. Unfortunately, this issue has received very little national attention and, as a result, data is scarce (Miller, 2018).

Increasingly, crime organizations, cartels, and criminals have turned to sex trafficking as a steady source of income in the US. Traffickers are able to abduct or to control an individual, place them on the street or in online ads, exploit them countless times a night, and do it all again the next day. This yields a far greater return on investment than drugs or the selling of other illegal items. It also generally comes with a much lower risk as well. Typically, catching traffickers is far more difficult than catching victims or buyers in the US. This allows traffickers to simply relocate or to start with another victim if law enforcement interferes with business (USA Today, 2019).

In the US, states are primarily responsible for defining, investigating, and prosecuting human trafficking. As a result, it is often difficult to convict traffickers, because there are numerous state definitions that vary from one another. In some states, prosecutors must be able to prove that

victims were physically abused in order to convict traffickers. Other states include psychological manipulation, financial obligations, drug abuse, or other such methods as ways for traffickers to control their victims (NCSL, n.d.). This disparity allows sex traffickers to cherry pick in which states they establish themselves. While one might think this would narrow the problem to specific regions, it tends to simply cause more violent or damaging behavior from traffickers in stricter areas, due to an increased concern over discovery.

> *"Approximately 90% of the sex trafficking victims in the U.S. are arrested, while only 10% of the buyers and suppliers are."*

Demand for sex trafficking remains one of the most difficult challenges for the U.S. to overcome. The high market demand emboldens traffickers and individuals in the U.S. to take more brazen actions. Reports indicate that the U.S. is filling this demand with its own children. Fifty to sixty percent of children who are victims of sex trafficking are exploited through the American foster care system. Children are often taken advantage of starting in infancy, and U.S. victim advocacy groups frequently report working with children as young as 3 (Keiper & Chiaramonte, 2019). It is not only the foster care system, however, that is exploiting young children. Known as familial trafficking, family members selling their siblings, children, or relatives for sex is increasing in the U.S. This happens both with and without the children's parents' knowledge. These cases are often wrongly identified as child abuse or rape allowing perpetrators to avoid proper prosecution. Children are generally highly susceptible to sex trafficking because they are easily exploited through relationships and they more easily develop trust with someone. Tragically, a 2016 study released by the South Carolina's Attorney General's Office indicated that family members are most often the ones involved in exposing children to traffickers

Additionally, they are often reluctant to report a family member for familial trafficking because they fear the subsequent family fall out (Dulaney, 2019).

Many businesses in the U.S. serve as fronts for human trafficking. According to Polaris, a non-profit, Non-Government Organization (NGO) dedicated to combatting human trafficking, illicit massage businesses (IMBs) are the leading business of choice for such operations. According to their research, Polaris estimates that there are over 9,000 IMBs established throughout the US. These places are blatantly placed in the open. They can be found in shopping areas, along the street, and next to restaurants helping them seamlessly blend in among reputable establishments. While some of these places may not force their workers to engage in sexual activities with their clients, the overwhelming evidence indicates that thousands of women are sexually trafficked through these "businesses" (Polaris, 2018).

The majority of women trafficked through these parlors all share some common traits. Generally, they are immigrants from an Asian country (with the majority being Chinese and South Korean), are in some kind of financial difficulty due to debt, have poor command of the English language, are poorly educated, and are mothers between the ages of 30 and 50. Any one of these traits can be easily exploited by traffickers. While these establishments obviously draw the attention of law enforcement, little can be done to stop them as a result of U.S. law (Polaris, n.d.).

Laws that govern the creation of businesses in the U.S. generally do not require business owners to list their name when filing. If a name is required, they can simply list a shell company or a paid agent to act as a front. As a result, the U.S. is actually one of the easiest countries in which to hide business ownership. Further complicating the issue, many IMBs are owned and operated by criminal organizations and cartels. They are able to combine these places with their portfolio of other legitimate businesses to spread out revenue, disguising the disparity between business charges and business profit to avoid suspicion. Almost all of

these businesses properly file taxes and are in good standing with the government and IRS (Polaris, n.d.).

As a result of owners being able to avoid detection, the victims themselves are often the ones arrested. The most common way law enforcement targets IMBs is through raids. These raids rarely, if ever, capture the owner or trafficker of the business, because they are never on site or involved in day to day affairs. Rather, the only ones apprehended are the employees and at times, patrons. At best, this may induce fear from customers in the community for a short time, but it does very little to stem the larger human trafficking issue. Owners and *traffickers are simply able t*o draw revenue form their other establishments and briefly absorb any loss in profits until a new IMB can be established. Raids do nothing to curb the demand or revenue of human trafficking (Polaris, n.d.).

To exert further control over victims, traffickers frequently relocate individuals. In IBMs this means that people are moved to different establishments every two to six weeks (Polaris, n.d.). Truckers and truck stops are often a staple of the human trafficking industry, frequently taking prostituted children and turning them into "lot lizards," a term used to refer to young children available for purchase. Due to their frequent relocation and ever changing "owners" or "managers" victims are unable to find anyone to help (Shared Hope International, n.d.). Additionally, raids, like the one aforementioned, also help traffickers exert control over their victims. Traffickers can point to police arresting victims and say that there is no one to go to for help. Victims are told that even the government and law enforcement are more interested in prosecuting them than they are in helping them (Polaris, n.d.). When successfully done, these things further exacerbate the problem.

In addition to victims with U.S. origin, immigrants are highly targeted by traffickers. These individuals may be brought into the country illegally and face deportation if discovered. As a result, victims often fear law enforcement and work hard to avoid detection. To circumnavigate this issue and to promote human rights, Congress passed a law creating the T visa in 2000. The purpose of

Hidden Cargo by Brian Omolo

this visa is to allow victims of human trafficking to remain in the U.S. for up to four years. At the end of this period some victims may qualify for permanent residency, but many are returned to their country of origin. While this has undoubtedly helped many, there are some drawbacks to it. First, in order to qualify, victims must have suffered from a "severe form of trafficking," a phrase that can be highly ambiguous. Second, victims must assist law enforcement in prosecuting traffickers, which can be difficult for many. Victims under the age of 18 or who suffer from severe physiological trauma may be excused from this prerequisite (U.S. Citizenship and Immigration Services, n.d.).

This visa does little to prevent human trafficking and, in many cases, exposes the victim to the same dangers they faced before their rescue. At the conclusion of the four year residency period, victims are returned home broken and with little place to go. They are likely to find themselves in similar circumstances that led them to be victims of human trafficking in the first place. Furthermore, people who were not shown to be "severely" trafficked receive little assistance. As with other government responses to human trafficking, this

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visa does little to provide real lasting assistance to victims.

The T visa, however, is not the only type of visa that presents problems for human trafficking. Many victims are promised passage to the U.S. for a large fee. Unable to pay, immigrants are forced to work indefinitely to pay their debt. Immigrants with work visas are often susceptible to labor trafficking by their new employers. Traffickers know that many work visas are non-portable and can force immigrants to work and to live under inhumane conditions with little to no pay. If immigrants seek to escape from such conditions, they face deportation for violating their work visa. Language also remains a barrier for victims of trafficking to overcome. Without a command of the English language, victims are unable to seek help from others or to read U.S. laws concerning human rights. Therefore, they may never realize that they have other options (National Human Trafficking Hotline, n.d.).

> *"Targeting victims does little to end the problem. The only proven way to stop trafficking is by removing the demand."*

In addition to its damaging effect on communities and individuals, the issue of human trafficking has implications for homeland security. One of the key tenants of homeland security is protecting American citizens. The fact that 85% of trafficked individuals in the U.S. are American born citizens illustrates the serious security failure taking place. As demand increases, more and more Americans are at risk for human trafficking. Additionally, as demand continues to grow, traffickers will continue to target children who are the most susceptible to exploitation. Children who become victims of sexual abuse are 28 times more likely to be arrested for prostitution in their lifetime (American SPCC, n.d.). This only perpetuates the problem and illustrates the lasting effects trafficking has on American youth.

In addition to the problem facing America's citizens, immigrants trying to enter the country both legally and illegally demonstrate the need for increased screening and security measures. The Department of Homeland Security (DHS) is responsible for both border security and preventing human trafficking. In January of 2020, DHS unveiled a new plan to combat the issue of human trafficking. The plan has five main goals: prevent human exploitation, protect victims, investigate incidents, partner with others to prevent trafficking, and develop improvements to help DHS confront the problem (Department of Homeland Security, 2020). At this point, it is to early to determine how effective this new strategy will be. Recently, however, acting Homeland Security Secretary Chad Wolf said that DHS would only be able to investigate the most horrific cases of human trafficking due to poor funding and lack of manpower (Giaritelli, 2020). While this plan seems to be a positive step in combatting human trafficking, traffickers will likely be emboldened to rush people across the border or to abuse the rights of legal immigrants while they can, before any real change can occur and before DHS is fully equipped.

Lastly, law enforcement and prosecutors face the challenge of securing American communities. Targeting victims does little to end the problem. The only proven way to stop trafficking is by removing the demand. This can take an extended amount of time as consumers must be systematically removed from the community. Once caught attempting to purchase a victim, it is extremely rare for individuals to try again (Alter & Tsai, 2019). To this end, current training of law enforcement around the country regarding the issue of human trafficking is a serious issue. Police around the country tend to view victims as anything but what they are, victims. Efforts have been made to change this narrative, but it will take time (Desilet, 2019).

If the demand for human trafficking does not diminish, the threat to U.S. children will only continue to grow. This will place increased stress on the foster care system and may begin to unravel many family dynamics. Additionally, the growth of human trafficking provides an outlet

Parrot by James Jeffcoat

for crime organizations and cartels to subtly infiltrate American communities. IMBs are found all throughout American suburbs and may provide ways for other dangerous commodities, such as drugs or illegal weapons, to be brought into neighborhoods. This would likely exacerbate a local police forces ability to combat the multitude of issues facing their communities.

From an immigration standpoint, more and more immigrants may potentially become targets of human trafficking without a decrease in demand. This will likely cause individuals to try and capitalize on the market. Driven by a desire to quickly provide a "product," traffickers will take on more risks to beat the competition. This increased acceptance of risk taking may result in more deadly engagements with border security, other traffickers, and even worse conditions for victims. This would in turn require the U.S. to increase border spending, diverting funds and manpower from other programs.

Human trafficking in all of its forms is a serious issue. Although the public is beginning to take notice, the demand for victims is increasing. The negative results of human trafficking can be seen and felt all around the country. One of the greatest treasures a country has is its children. It is time for serious action to be taken to combat human trafficking, before it destroys any more lives.

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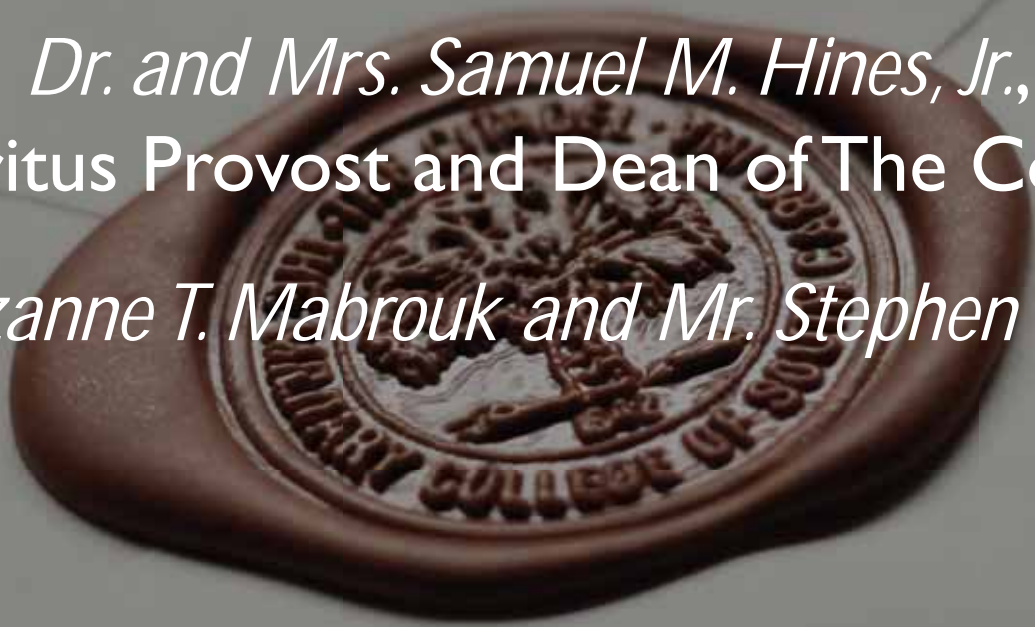
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