

INTERNATIONAL BACCALAUREATE EXTENDED ESSAYS 2021



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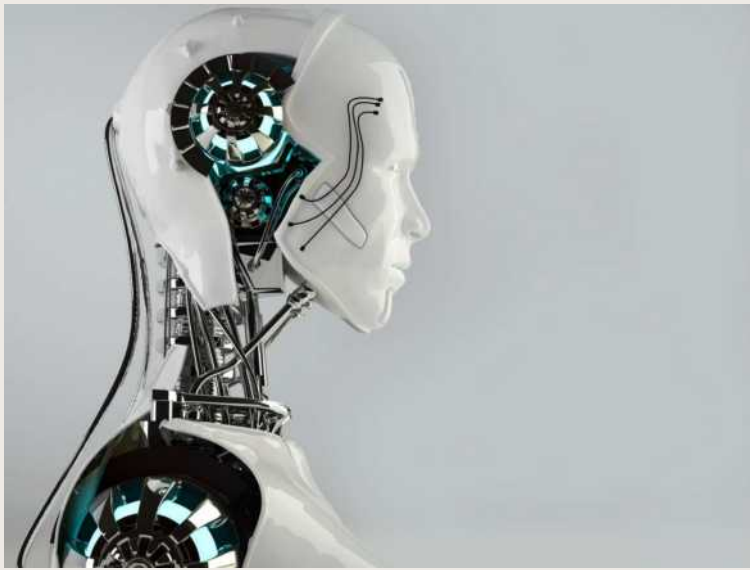
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Introduction

Over the last decades, rapid advancements in technology have allowed us humans to reach new heights: from the first car, to the first airplane built by the Wright brothers in 1903, to the Moon landing just 66 years later. Mankind has always had a spirit for innovation, exploration, creation and, recently, automation. The idea of self-sufficient, self-aware, sentient machines and computers has always fascinated us; the idea of artificial intelligence has been around since the ancient Greeks: they had imagined an automaton named Talos, who was tasked with protecting Europa (residing on the island of Crete) from attackers and invaders. The mathematical and technological concepts of artificial intelligence were not explained until Alan Turing developed the theory of computation, (Sipser, 2013) according to which a machine, by using different combinations of simple symbols (in this case 0 and 1, power and no power, on or off) could conceive any possible act of mathematical deduction (in other words, make decisions based on the input it receives).

The idea that computers and machines can simulate processes of formal reasoning and decision making was theorized in the Church-Turing thesis, developed by mathematicians Alonzo Church and Alan Turing, based on the lambda calculus mathematical function designed by Alonzo Church. The specific field of AI research was born at a Dartmouth College workshop, in 1956. The pioneers and creators of this field were Allen Newell (Carnegie Mellon University, CMU), Herbert Simon (Carnegie Mellon University, CMU), John McCarthy (Massachusetts Institute of Technology, MIT), Marvin Minsky (Massachusetts Institute of Technology, MIT) and Arthur Samuel (International Business Machines, IBM). Along with their students, they created programs that could play checkers (draughts) that could reportedly beat average human players by 1959, programs that could solve algebraic problems, that could prove logical theorems, and some that could even speak English. This prompted the Department of Defense of the United States to fund AI research laboratories both domestically and around the world, including at MIT (Heather Knight, 2006) . They underestimated the difficulty of developing efficient and effective AI programs/machines, and funds were cut in 1974. In the early 1990s, using AI for data mining, logistics, diagnostics (medical expert systems) created ties with other



areas of research such as economics, statistics and mathematics which boosted AI back up to one of the top fields of research.

In the following years, artificial intelligence became real, though it was applied in a limited amount of fields; for instance, the chess-playing computer Deep Blue, developed by IBM in the late 1980s/early 1990s, beat the reigning world champion Garry Kasparov on the 11th of May 1997. It did this through a method known as brute forcing: evaluating every possible combination of moves based on the current position of the pieces on the board before actually making the move. It won by exploiting a mistake made by Kasparov in an opening move. This was a turning point in the field of AI and computing. Advancements in computing power, the reduction in infrastructure costs and material costs, the development of machine learning and deep learning, as well as that of artificial neural networks made AI research and application extremely common and valuable; in 2011, Apple released the iPhone 4S, and with it came Siri: perhaps the most famous AI assistant ever; it holds about 48% of the total market share in the field of AI assistants (Kinsella, 2018). Siri uses advanced machine learning algorithms and capabilities to adapt over time to its owner's preferences and habits. Smart home devices based on AI are also becoming quite common, with over 136 million units owned worldwide and a household penetration rate of 9.5% predicted to rise to 22.1% by 2023 (Smart Home, 2019). Google Home and Amazon Echo are two examples of these. They utilize voice recognition algorithms based on speech patterns and accents in order to fulfill the queries input by the user(s). They, much like Siri, adapt over time: active hours, passive hours, common requests, names, speech cadences and other data is mined and used to adapt the algorithm.

Nowadays, AI has made its way into the physical world: some robots equipped with AI software can be programmed to execute functions and complete tasks and can also learn from their experience. The application of robotics in the real world is becoming almost ubiquitous: automated factories operated almost entirely by robots; autonomous/semi-autonomous drones sent in dangerous areas to rescue people or retrieve sensitive information, or simply used in everyday life to take bird's eye view photos and videos of the environment. It is hard to deny the



fact that we are becoming increasingly attached to technology with every new advancement we make (Human Dependency on Technology, n.d.). This begs the question of the inclusion of such technology in education: there are schools of thought that believe that increasing the presence of technology in education could increase our dependency, while others believe that, given the current trends, it is better to learn and adapt to the new world rather than remaining set in one's ways. The latter is the more popular of the two; the study of robotics and AI is being integrated into schools all around the globe and at various levels of education ranging from primary school all the way to Master's Degree courses and Doctorates.

Technology in education

The use of technology in education has become the norm in the last decade: most schools teach courses such as computer science and ICT/ICT related subjects; most schools have computer labs, and most schools make use of the Internet to communicate with parents, students and other schools. However, the rapid advances in technology that have taken place in the same decade are changing the playing field more than some may expect. Several countries and unions of countries have put in place/are putting in place programs that encourage the use of technology and the teaching of technological skills: in January 2018, the European Union adopted a Digital Education Action Plan that includes 11 initiatives that support the use of technology and the development of digital competence in education. The plan has three main priorities: ***Making better use of digital technology for teaching and learning***, which aims to improve upon the accessibility and availability of technology in schools and other educational facilities by enhancing access to the Internet (focusing on areas with poor access) and providing a framework that will be used to issue “digitally certified qualifications and validating digitally acquired skills”; ***Developing digital competences and skills***, which aims to develop a Europe wide network for online learning, using virtual campuses, cultural exchanges and blended mobility; ***Improving education through better data analysis and foresight***, which will use AI based learning analytics pilots in education and improve the learning experience over time. One of the



fields of technological education/digital skills that is being promoted with considerable urgency is the study of Artificial Intelligence, robotics, and the relationship between the two.

In many modern schools, teaching robotics at various levels has become very common in the last 5 years (Eguchi, 2013). From basic Lego Mindstorm robots that can pick up items and change direction when they see a specific color, to more complex machines capable of learning basic activities by themselves using machine learning, AI based classroom resources are slowly becoming the “present” of education rather than the future. The “AI revolution” is truly global: robotics is a field taught in countries all over the world by various schools and institutions; the I.T.I.S (Istituto Tecnico Industriale Statale) establishments in Italy, to secondary and primary schools in the United Kingdom, through international schools in China (TECHNOLOGY & INNOVATION, n.d.) and now Africa (Sandra, 2018). It is believed that the study of robot-building and programming can spawn very practical skills in students such as logical thinking, analytical skills, problem solving and solution-building.

The most evident advantage of teaching robotics in schools is that students are more likely to develop interests in STEM classes and develop an interest in technology and science, which are becoming extremely valuable in today’s society. The *Scuola di Robotica* (Laboratori e corsi per studenti, n.d.) initiative present in Italy offers robotics courses in schools, as well as independent workshops in order to learn the basics of coding, programming and following flows of logic and reasoning. They state that by integrating robotics in an interdisciplinary curriculum, students will build knowledge related to science, math and computer science that will be crucial when it comes to understanding reasoning skills used in other fields such as linguistics and philosophy, among others. The study of robotics is being used to teach students about programming and coding, skills that are becoming more and more valuable as the job market shifts more and more towards high-tech and tertiary sector jobs. Many educational robot packages have a programming interface with which students can modify the robot’s actions (e.g. the Mindstorms EV3 software, made to be used with Lego EV3 Mindstorms robots), which plays a part in teaching students about flows of logic and thinking skills. Teaching coding using robots



is more gratifying for students, since their actions have consequences on a physical object in the real world, rather than a virtual program on a computer screen. This, as mentioned previously, not only helps students learn the skills directly related to programming, but also problem solving skills, algorithmic thinking and logical thinking (Barak & Zadok, 2007). As students progress through their studies of robotics and programming, they can decide to use text based coding rather than GUIs to program their robots, which will further develop programming skills. The EV3 software allows the use of RobotC, based on the C programming language. This is possible with some tweaking and a firmware installation on the robot's control unit.

Students will also develop the ability to make accurate predictions based on code they have written, processes they have designed, or simulations they have created and run. This will make it so that students will develop different ways of thinking and will acquire higher level cognitive abilities that will be invaluable in their careers in the future. In primary and lower secondary schools, robotics can be used to teach children the importance of collaboration and teamwork, as well as communication skills. The *Sant'Anna School of Advanced Studies* located in Pisa offers higher level robotics courses for students pursuing Master's degrees and Doctorates. These courses go into depth about the implications of robotics and AI on the real world: economic implications, social and ethical implications as well as laws, regulations and policies related to the development of the field. Universities and colleges around the world are offering more and more courses on artificial intelligence and advanced robotics: countries such as the United Kingdom, Macedonia, the United States and Italy are beginning to encourage engineering and computer science students to take courses that involve the study of artificial intelligence.

Effect of robotics on students worldwide

In order to see the level to which teaching robotics affects students and the areas in which this leads to improvement, I sent out a survey to Design and Technology and robotics teachers from different geographical locations so as to get an idea of how economic development, technological development and culture affect the way in which robotics is taught and the opinion



of the public on this subject. My interviewees are Mr. Clement Low the pedagogy director at Nullspace Robotics (an institution that provides technology education. They provide programming and robotics classes to various schools within Singapore and internationally, as well as their *Centre for Robotics Learning.*), and Mr. Carlos Leon, a Design and Technology and robotics teacher from Colombia, currently teaching internationally at Ecole Ruban Vert. The questions I asked were related to their approach in teaching robotics, the advantages of learning programming and robotics, and the way their respective communities perceive the increased emphasis on technology and programming in education. The answers I received were thought-provoking and not necessarily what one may expect. I inquired about the approach they took in the teaching of robotics: using abstract models and applying them to the real world was the answer in both cases, which is to be expected considering that programming is a mostly abstract concept that affects the real world. The way teaching robotics and systemic thinking affected their students was mentioned: the consensus was that systemic thinking skills allow students to make complex relations between physical mechanisms and algorithms, and also allows them to more easily use their pre-existing knowledge to arrive at conclusions. They also commented on changes in the way their students approached problems, mentioning that changes were not radical or entirely obvious, but were significant enough to make a change. The fact that robotics is an optional class in many cases makes it so that students with an incline for science choose to take it, but if the class is designed properly and made more appealing to other students, they will benefit from improved skills in mathematics, research and interestingly language (likely due to the analysis of programming languages, which would make it easier to understand the way their own language works). The perception of robotics by their respective communities was also mentioned in their answers; students see robotics as a sort of game, their parents see it as “futureproofing”, and many teachers see it as more work unrelated to the curriculum. Since STEM subject require a different approach to learning (practice, repetition and good logical basics), and this approach is sometimes limited by teaching curriculums. This means that students cannot fully benefit from their STEM courses, and that robotics could be invaluable in helping them learn and grow. The way the general public (not necessarily the local communities) perceived the teaching of robotics has changed: it is no longer just an option to develop research



skills and technical skills, it is now more popular as a learning model (systemic thinking, algorithmic thinking, approaching problems in a more logical way). The increasing popularity of robotics made it so that international competitions became more common, further driving the popularity into an upward spiral. Competitions such as the FIRST Global Challenge are proof of this (THE 2017 FIRST GLOBAL CHALLENGE, 2017).

In short, robotics seems to be proving extremely valuable in boosting performance in school, both in STEM subjects like math and sciences and non-STEM subjects such as languages and history. Other countries have started implementing robotics courses that provide students with skills necessary to compete at an international level. One such country is Kyrgyzstan; in collaboration with the Aga Khan School and Aga Khan Lycée, a program called Junior First League robotics was put in place in late 2017/early 2018. The JFL is a 9-week program that aims to teach students about STEM subjects and various world issues such as recycling and waste management in a fun and engaging way. The program was a success, and thus became a regular after-school activity in both establishments. According to their website, over 20 students from each school are benefitting from this initiative (FEATURE: Robotics Programme sparks innovative learning in Central Asia, 2018). Several volunteers from Canada went to Kyrgyzstan and Tajikistan to provide training in various subjects/courses. One of these teachers, Sobia Makhani, was asked to train teachers in Kyrgyzstan. She trained teachers from government schools, as well as teachers from AKES schools (Aga Khan Education Services). The training session lasted 11 days and involved 30 teachers. She participated in the JFL program and provided training to students as well, with a more practical course for 32 students. The regional head of education for AKES, Aziz Batada, claims that *“teachers and students who participated in last summer’s robotics and upgrading programs have commented on their wonderful learning experiences, with many teachers developing new approaches to their own teaching practice. Students were motivated to further develop their English language proficiency and Math problem-solving competencies, resulting in increased self-efficacy when applying to English speaking Universities in the region, including the University of Central Asia and Aga Khan University.”* (LEGO Robotics, English Upgrading and Math Numeracy programmes delivered in



Tajikistan, 2018). Kyrgyzstan was present at the FIRST Global Challenge international robotics competition in 2017 and 2018, and obtained good results for a country that only recently started developing robotics programs and was competing internationally for the first time, placing 87th in the 2017 Global Challenge (THE 2017 FIRST GLOBAL CHALLENGE, 2017), and 158th in 2018, narrowly losing out to Team Australia (THE 2018 FIRST GLOBAL CHALLENGE, 2018). This goes to show the impact that robotics can have in mostly rural countries such as Kyrgyzstan and Tajikistan. Admittedly, the sample size is relatively small, but the impact that this program has had was too positive to be dismissed entirely.

Effects of robotics on students with disabilities

The use of robots in education is not just limited to programming and developing logical thinking in students; robotics can also be used to promote inclusivity in classrooms and help students with disabilities and/or learning deficiencies. Some schools have implemented programs involving robots for children with autism. In 2013, researchers from the University of Birmingham, in collaboration with researchers from the University of Valencia and ACER (Autism Center for Education and Research), developed “*a suite of intelligent behaviors*” (Robots in the classroom for children with autism., 2013) for the Nao robot developed by SoftBank robotics (formerly known as Aldebaran robotics), a French robotics firm whose aim is to develop robots that can be used in as many fields as possible; for instance: research, education and healthcare, as well as private use in households. The aim of the project is to help children with autism to recognize emotions and improve social skills and emotional intelligence. Nao and other robots like it are used in more than 10,000 schools worldwide to help children with autism (Williams, 2018) . They are used to develop social intelligence and reduce anxiety in a classroom setting, which is something that children who fall under the spectrum offer suffer from. Robots are used for this purpose because, unlike humans, they do not change facial expression or show emotions indirectly through body language and tone of voice, which makes them the ideal candidate for working with children with reduced social and emotional abilities. Children with autism greatly benefit from consistent and unchanging environments, and robots such as Nao offer just that. Reports indicate that children who regularly interact with Nao achieved an



increase of 30% in social interactions and improved verbal communication when a robot was present (Falconer, 2013). The same report found that this increase was mirrored in interactions between the children and their parents and teachers. Ben Waterworth, a teacher at Topcliffe School in the UK says that *"The ASD [autism spectrum disorders] children benefit a lot from using Nao. You see a different side of them when they are working with him. You see them comfortable with Nao, responding to him and I just think these are features you just would not see with a human. They would be more shy with that person, they would be more withheld or withdrawn, whereas with Nao they are more outgoing."* (Falconer, 2013). This shows the value of robots in the classroom; students who fall into the autism spectrum benefit massively from their use in their education. Robots are also used to teach students with autism about STEM concepts such as motion and algebra in a more interactive way, which is highly beneficial to children with autism. For instance, Bee-Bots (robots specifically designed to teach problem solving and directionality to children) are used in teaching problem solving in math: the robot lands on a problem, and the student has to solve it. If the solution is correct, the robot moves onto the next problem. This makes it easier to grasp abstract concepts like basic algebra and mathematical problems. In the realm of physics, a robot known as Sphero is made to run through a maze while adding weight modules to improve friction. This helps the students get a better understanding of concepts such as motion and direction by providing a physical object that can be interacted with rather than having a virtual object move on a screen, or simply a written problem (Williams, 2018).

Conclusion

To conclude, I believe that robots and robotics should be a tool used in every classroom in every school. The teaching of robotics and programming helps students develop important skills such as critical thinking, logic, problem solving and creativity while providing a physical object that can be manipulated in the real world rather than an abstract computer program. The modern job market requires increasingly high levels of IT proficiency due to the evolution of technology, and thus children who study robotics will be more prepared for the future and life outside school. Their use in classrooms as a learning tool has proven invaluable when it comes to increasing inclusion; children with autism benefit greatly from the consistency and predictability



of robotic behavior, which can bridge the gap between children with autism and those without, and may finally eliminate the stigma against the spectrum.



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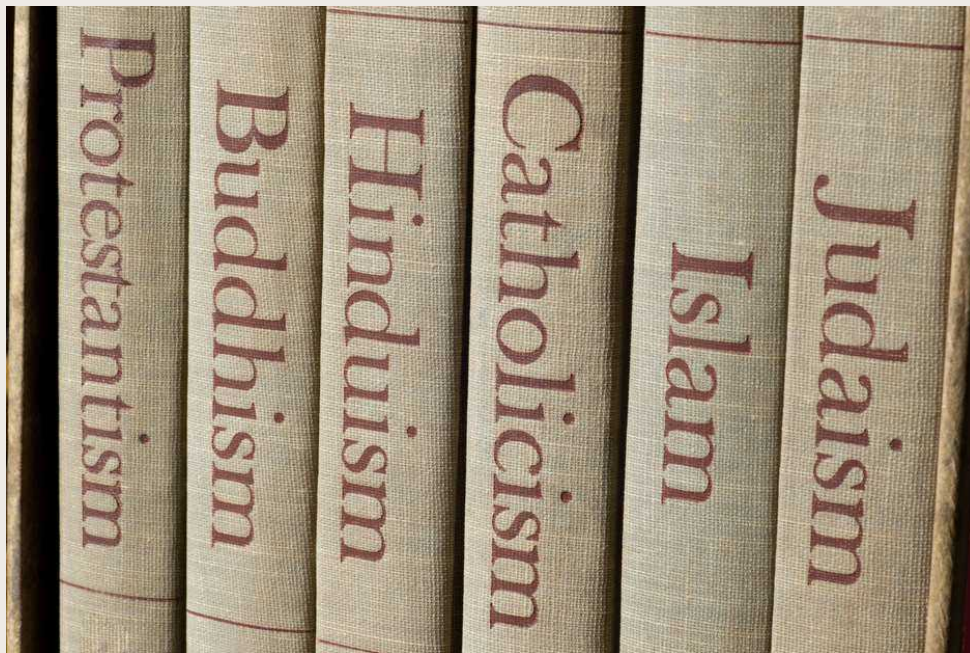
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RELIGION IN BLACK AMERICAN COMMUNITIES IN EARLY 20TH CENTURY

ENGLISH



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Introduction

After the abolition of slavery through the Thirteenth Amendment of the United States Constitution on January 31th, 1865, the status of Black African American in the country radically changed from that of slaves to free American citizens. Although slavery had been abolished, life for Black people did not get easier, especially in the South. Indeed, Black Americans were deprived of most of their rights and were still dominated by the White majority under a set of laws called the Black Codes (Maloney, n.d). In the South, though they were said to be free, black Americans lived in extremely poor conditions. As they had not been allowed to be educated or paid under slavery, these newly freed slaves were forced to rent land from white people and consequently had to give them a portion of their harvest as compensation (Ricchiuti, n.d). The late twentieth century saw the victory of Black Americans fight to get full rights as American citizens but the early part of the century was the theatre of several issues affecting the black community. While some braves ones left the South for the North in the struggle to find better living conditions, most black Americans in the South felt powerless facing the dreadful environment they were living in and found other ways to distract themselves and perhaps, raise some hopes for a better future in a more equal United States. Black American art and music such as Jazz started to play a big part in black people's lives. Black American churches also took an important place. In fact, after slavery, family and church became the centre of black people's lives. Black churches became almost crucial in black communities for spiritual matters as well as forming a community and socializing with others (Maloney, n.d). On the other hand, because education became more available to black people in the US, that period also witnessed the rise of several black African-American writers whose literary works were mostly the reflection of the historical period they were living in. This essay will talk about one writer in particular named Richard Wright. Born in 1908 in Mississippi, though he is at first a very typical black African-American kid of his time, Richard Wright's hunger for education and freedom quickly turned him into a remarkable book writer with his book "Native son", published in 1940 and his well-known autobiography "Black boy".



In his autobiography "Black Boy", Richard Wright recounts his childhood in the South of the United States ruled by the Jim Crow law. He describes how he migrated to the North in his quest for a better life and joined a communist group in Chicago. Wright's childhood was typical of Black kid from the South but what set him apart was his rebellious natures and his thirst for education. In his book Black Boy, Richard Wright explores many issues that are proper to black people's lives in the South such as racism, isolation, scepticism concerning several realities of life and most importantly, religion. In his autobiography, Richard Wright clearly described how religion was a very important part of his family as well as for the Black community he lived in, though, he categorically rejected religion. When exploring the theme of religion in his book, Wright mentions many characters such as his grandmother who was an "ardent member of the seventh-day Adventist church" (Black boy, 1946, pg 103) and does quite a lot of criticisms of religion and its practices by Black people in the 1910s to 1920s. Many criticisms of the book state that, Black Boy, though it is a recount of Wright's life, is not a simple autobiography as Richard used it more as a tool to criticise the society, made of racial injustice and racism, he lived in. This paper will determine to which extent the image of religion portrayed in Wright's autobiography mirrors its real influence in the African American community of the United States in the early twentieth century.

I-Religion in the black brotherhood in the early twentieth century

In the 18th century, as an increasing number of African slaves were brought to the US (especially in the Southern states), a clash of religious beliefs among different groups resulted in the creation of new perspectives on religion (Weisenfeld, 2018). This later brought about the rise of religious institutions such as African Methodist Episcopal Church, the African Methodist Episcopal Zion Church, and the National Baptist Convention (Weisenfeld, 2018). In the 1770s in the South, a long time before slavery was abolished, numerous black slaves secretly converted to evangelical religions such as Methodists and Baptist faiths. In those religions, the priest preached to their congregations the idea that all Christians were equal before God. This rose a lot of hopes of a



brighter future for the slaves. Even though white slave owners and clergy promoted obedience of black slaves towards their owners to prevent any rebellions. Black slaves continued holding secret meetings where they were preached religious ideas on equality among all Christians. This was because during slavery churches stood as psychological refuges, the headquarters for any act of rebellion, and a medium to express their thoughts and hopes for a better future (Maffly-Kipp, 2001). Before the Civil Right Movement, those churches and independent religious groups were privileged places for Black Americans to discuss and exchange thoughts on the slaves' current situation and slavery as a whole. Some groups even plotted in the hope of finding a way to counter white dominance and thus abolish slavery. Later on, after their goal for emancipation was achieved, those churches apparently became more than a place for spiritual support. The journal article "Religion in African American History" explains that as the churches became more important, they started playing a larger role in the black Americans' communities. They started providing the possibility for political activism, economic development and even educational opportunities (Weisenfeld, 2018). However, though they were concerned with the issues faced by their community, Black were not implied enough in the process of changing the system (Said Sewell, 2018). The fact was that, though the Civil War had been a victory for black American slaves with the abolishment of slavery, the black community of the US still faced several difficulties such as a blatant inequality between races, poor economic conditions or poor educational opportunities. Those main difficulties were one of the main causes of the Great migration of Black American from southern cities to the north of the United States that took place in the 20th century. There were only three main alternatives offered to black people in the south at the time: lead a fight against the injustice, move to the south for better living conditions or accept their conditions and stay in the south. Though many of them left for the south from the early 20th century, the more recalcitrant Black people stayed in the south of the country that was governed by the very strict Jim crow laws. Those ones had no solution but to adapt themselves to the lifestyle of black people in the southern cities and find a refuge in community churches. That is what Richard Wright portrays in his autobiography "Black boy".



II-Reflection of importance and effects of religion in Black people's live through Richard Wright's book

Similarly to many other great black American writers of the 20th century who experienced the Great migration and other difficulties faced by the black communities, Richard Wright wrote his own autobiography where he describes his childhood and experience of inequalities in the US. In "Black boy", among other themes such as racism, inequalities, the Jim crow laws or the Great migration he wrote about in his book, Wright constantly presented the theme of "religion in the black community". In Black boy, it is obvious that religion played an important role in his life, not in terms of personal engagement but rather under his family and community's pressure. From his early years at the start of the book, Wright already shows his personal indifference to matters concerning religion as a whole. When he goes to live with his Grandmother, Richard states "*I became skilled in ignoring these cosmic threats and developed a callousness towards all metaphysical preachments*" (Wright, 1989). Here, he suggests that he developed an ability to resist to all types of preaches on God or any type of almighty supernatural being. However, his own family members and community in the south were rather largely devoted to the religious life. Among all the characters of the book, quite a majority were involved in religious activities that Richard Wright fairly criticised throughout the autobiography.

In the first chapters of the book showing his first contact with religion, or rather the reader's first impressions of religion through Wright's experience, he is initiated by his mother. At the start of his autobiography, Wright portrays his mother as a rather strong character. In the early 20th century in the United States, though some woman started asserting themselves on the political plan, the role of the black woman remained mainly in the community limits. In fact, most did not even have a proper job. The husband would be the one finding a job to help his family and the woman would take care of the households and the children's upbringing. Left with no much left at hand to do, most black American women in the south finally felt appealed to community churches. It was a



place where they could get recognition for their service to God, a position in the management system of the local church, a spiritual support and a way to connect with the rest of their community (McKenna, 2018). Similarly, at the start of his autobiography, Richard Wright shows his mother to be the typical Black American Woman of the South where they lived in Memphis. Before her husband quit her, her role was to take care of Wright and his younger brother (Wright, 1989). At that period, Richard's mother was not portrayed as a fervent church attendant. However, when she split from her husband, she started being attracted by religion. In *Black boy*, Wright states *"After my father's desertion, my mother's ardently religious disposition dominated the household and I was often taken to Sunday school..."* (Wright, 1989, pge 154) to show his initiation to religion. At this stage, it is obvious that as many other black American women of her time, Richard Wright's mother is trying to find a spiritual support at the church in order to bear her current lifestyle. Later on, after she got sick, she started to attend a Methodist church in Jackson, Mississippi, one of the most influential churches in the South. She even draws Wright into baptism. However, at that part of the book, it is noticeable that her attendance to the church went beyond a need of spiritual support. Like a typical black American woman in her situation, she wants to be part of the community she lives in. A proof of that occurs when Wright writes *"it was no longer a matter of believing in God...it was a simple, urgent matter of pride..."* (Wright, 1989). Therefore, through her character, we could see the struggle of most American women who saw religion as a way to belong to their community, something that Wright criticizes a lot.

Another character in *Black boy* who is a perfect example of the importance of religion in Black people's lives is Wright grandmother, commonly called Granny in the book. Even from her first apparitions in the book, she clearly displays her strong bond and devotion to religion and church life. However, unlike Wright's mother whose interest was more to be part of the community through the church, his Grandmother is described as a fervent Christian who sincerely believes in God, life after death in heaven or hell and other concepts linked to Christianity. As Wright mentions in the book she *"was an ardent member of the seventh-day Adventist church"* (Wright, 1989). In a way, it can be said that Wright used his grandmother to mirror black American women



of her age in the south. Apparently, the black women members of the seventh-day Adventist church were genuinely involved in the church's activities. They organised the social services, invited members of the church at home for dinner and would eagerly accept any of the preachers' requests in the hope of getting more of God's blessings (Mellowes, 2018). Wright shows those typical characteristics in her Grandmother when he talks about the "harsh religious routine" they were all to comply with in her house. For instance, Wright and his family had to endure long and dreadful daily family prayers, bible readings as well as morning and evening attendance to the church (Wright, 1989, pge 57). His aunt, Addie, who was a teacher at the Seventh-day Adventist school, is another character who portrays the implication of black American women in the church. In the article African American religion, Sewell wrote *"The traditional perspective on black religion and the Black Church has tended to focus on the inward, "other-world," perspective...choosing to focus (the) attention on heaven and the eternal life..."* (Sewell, 2018). Similarly, in Black boy, Richard Wright explains that when he describes his grandmother's dedication to God. This means that when they attended different churches, black American people used to give more importance to future spiritual rewards such as the promise to soon live in a world without any inequalities. On several occasions, Wright criticizes his grandmother and aunt's blind devotion to God which he somehow interprets as a weakness in the black community.

Furthermore, Richard Wright uses his autobiography to mirror the black community in the south in the early 20th century when he writes about the kids going to the Methodist church in Memphis. Wright shows that their interest, beside God and holy matters, was mainly centred on the feeling of belonging to the community. When they urged him to join the church, they clearly said *"Come to church and be a member of the community"* (Wright, 1989). The fact is, after being ripped away from their cultures as African slaves, forced to accept Europeans' culture and beliefs and then considered as less than humans, African American people were left without any identity to claim as their own. After the abolishment of slavery and the creation of black neighbourhood in southern states, African American had to build back their life, along with their identity and culture (National Museum of African American History and Culture, 2018). As they had been introduced to



Christianity during slavery time, they were naturally drawn to churches and denominations, not only for the spiritual support provided but also for some features of African American churches such as Gospel music. If one did not go to the church in the community, he was automatically alienated by the others. In the case of Richard himself, his family and community tried to make him accept the existence of God in his own life but after a tough resistance from him, he was finally set apart as being sinful. For instance, at one point, the members of his family give up on “saving his soul” from hell and completely ignore him. This also prompted adults in the community to ask their children to stay at a safe distance from Wright in the fear that they will be contaminated by his dangerous rebellious nature. As a result of this situation, Wright admits feeling like an outsider within his own family and community (Wright, 1989).

Other than through the characters listed above, the significance of religion to the black community is also portrayed through the amount of pressure put on Richard for him to finally join the church life. It begins with his mother and Grandmother who imposed strict religious routine in the household. Furthermore, his Grand-mother said that she would only accept to keep Wright in her house if he complied to go to church. Later, the tension increased when other people from his community urged him to join the church.

As a whole, through those characters of his autobiography Richard was able to create a resembling representation of the role and importance of church in the African American communities, especially in the south. However, in his book Wright does not limit his writing at representing the society he lived in at that time. He also implemented rather pragmatic and pejorative criticism of religion.

III- Richard Wright criticism of religion within the book

Growing up in a family and community where religion plays a crucial role is not the easiest thing to do when one has always been indifferent to it since his childhood. That was the case of Richard



Wright. His disastrous first encounter with religion in the book already foreshadows the nature of his future point of view and feelings toward it. After his father's desertion, Wright's mother became more devoted to the local church in Jackson. One day she invited the preacher to dine at home and Wright explains having automatically grown a real dislike for him because the Holy man was about to finish the chicken which was a dish that the young Richard Wright did not often have the opportunity to eat. This incidence may seem insignificant at first, but knowing Wright's view on religion, his behaviour as a child can be considered as an early manifestation of his disregard for anything linked to religion. After this first incidence, Wright gradually expresses his lack of interest in church though he still wishes for acceptance from his surroundings. Unfortunately, he has to choose between joining the church and be part of the community or avoiding religion and be rejected. Richard Wright will end up rejecting religion. Being an outsider now, Wright has the opportunity to see his community from an outside point of view, allowing him to bring about a criticism of his so called "society" (Wright, 1989). As previously stated by Sewell, the church encouraged African American to focus on an "*inward-other world perspective*" where life as a mortal on earth should not be considered with excessive attachment (Sewell, 2018). The "real" life for those people was to be in heaven, where there would be none of the issues the black population of the south was facing at the time such as racism, severe segregation, lynching. According to Sewell and Maloney (2018), this attitude prevented Black American to bring rapid changes to their situation. They preferred to depend on God to solve their own problems rather than trying to stand up themselves (Maloney, n.d). In the same way, Richard Wright subtly gives his opinion on religion from what he noticed in his own community. For instance, he makes a rather revealing comparison between the students of the Seventh - day Adventist religious school in Huntsville (Alabama) and those at the public schools he attended before. When he talks about the students of the public schools, Wright conveys to the reader the image of a living atmosphere with self-conscious people. He even added that the public school was a place where a boy could catch "*a glimpse of what the world was*" by experiencing different situations. However, when Wright describes the students at the religious school he calls them a "*docile lot...their personalities*



devoid of anger, hope and laughter...passion..." (Wright, 1989). Here, Wright is harshly criticizing those kids by using the word "docile" to show that they had been educated in a way that turned them into a submissive lot and deprived them of emotions that could bring out their rebellious side. He then insinuates that those students show clearly the features of their religious environment. From this comparison, it can be deduced that Wright wanted to show how even the kids at the religious school had been made passive to the world they were leaving it because of the religious beliefs they were preached, just like the adults. In early 20th century, unlike Wright, several black children still did not attend school. This made them less opened and critical towards the world surrounding them. As a result of that, many of them had their education built up by their parents and community. One of the factors composing their education was also religion. This is why several of those people ended their lives as naïve workers in cotton fields in the south. Wright criticizes that when he describes his conversation with a young boy from his community. He labelled the boy as naïve and clumsy in his ability to talk, meaning that he could not think for himself as he was controlled by his parents, community and church. Through his use of irony and sarcasm, he aimed to show how pointless and ridiculous it was for the kid and his whole community to be so devoted to a metaphysical entity that may not even exist.

Conclusion

Overall, throughout his autobiography *Black Boy*, Richard Wright shows how significant the role of religion was in black Americans' lives in the early 20th century. At the time described in the book, Black Americans were facing several difficulties such as poverty, inequality due to the harsh Jim crow laws and lynching by the white community especially in the south of the country. In the book, Wright also shows that his family and neighbourhood were living in the same state of poverty and inequality. Through the behavioural portraits that Richard made of some of his family and community members such as his grandmother or mother, the readers can already see that the main use of religion was to give spiritual and mental support as well as a feeling of belonging to



black people considering all the issues they were facing. Furthermore, similarly to many other writers and historians, Wright harshly criticizes the way most black people in the south, his family comprised, used religion as an excuse to not take any actions against all the injustices they had to face. He also insinuates that this way of thinking might be a result of the lack of education and freedom of Black American in the early 20th century . It is truly interesting to notice that when talking about the church, writers, historians and Richard Wright, for instance, always use female characters to describe the bond between black Americans and religion. This might suggest more on the importance of women within the community and the household in the black American history and culture.



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RACIAL AND CULTURAL ALIENATION OF THIRD CULTURE KIDS



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Introduction

As a result of technological advancement and globalisation, one's quest of settling in a place other than that of their birth has become more frequent. A consequence of this new migration trend has been the birth of Third Culture Kids (TCK's), a term used to describe "a person - adult or child - who has spent a significant part of his or her developmental years outside the parents' culture" (Pollock, 2009). Although there are different types of TCK's, most of them go through similar experiences and share similar advantages *and* disadvantages.

It is common to believe that these advantages, which include easy adaptability and mastering of several languages, outweigh the disadvantages of being a TCK. However, being a "cultural hybrid" is not always that joyful: cultural and ethnic confrontations are prevalent in the Third Culture World, and they have not ceased to be an issue for the ones concerned. Indeed, racial and cultural discrimination against TCK's is not a rare phenomenon; along with identity struggle and lack of roots, it constitutes the main issues of being a TCK and has been portrayed in various literary works such as *Everything I never told you* by Celeste Ng and *The weight of water* by Sarah Crossan.

In Ng's novel, one of the main protagonists, James Lee, struggles with loneliness caused by him being a Chinese man in the America of the 1970's. Kasienka, the main character of Crossan's poetry book, faces the estrangement of being a Polish girl attending an English school. Both characters experience mockery and humiliation and share a similar isolation from the rest of the world. Nevertheless, their ways of coping with this isolation differ: James, having grown up Chinese on



American soil, is accustomed to the feeling of loneliness and comes to terms with the fact that he can never put an end to the prejudice of others. His alienation corresponds to that of a typical TCK: China, the birth country of his parents, is not his home for he has never stepped foot there; he does not fit in with the Americans because he simply is not American and no one made him feel welcome when he was growing up. Like most TCK's, he does not know where he belongs. Kasienka, on the other hand, grew up in Poland and knows she will never be English. Still, she tries to blend in and fit the description of a regular English girl to escape alienation and to belong in the English community.

The two characters resemble each other in that they struggle with finding their identity, a matter commonly studied in Literature for it has shaped the work of countless authors of the 20th century. Since many people believe Third Culture Kids are lucky and open-minded geniuses, the identity struggle and racial alienation they face is often not being considered as a grave issue. The acknowledgement of this struggle is important because it is the first step in creating a world free of prejudice and bullying : before trying to solve a problem, one must understand the nature and depth of it. Knowing the different possible causes of Third Culture Kids' loneliness can enlarge one's horizon about the topic, enhancing one's abilities to help the ones concerned. Thus, analysing a character's behaviour towards alienation and being a TCK is a start to understanding the depth of this issue.

This essay will begin by studying the feeling of loneliness felt by the two characters, then will analyse how they struggle with finding an identity as a result of said loneliness. Finally, the relationships of each character will be explored in an attempt to show how important it is for TCK's to create meaningful ties wherever they go. The purpose of this essay is to investigate the various ways in which TCK's react to different situations in order to sharpen our understanding of where exactly do their undesirable feelings stem from as well as how it is best for them to respond to said feelings.



I. Feeling of loneliness and estrangement

The first common trait of Third Culture Kids around the world is a strong feeling of loneliness. As people who often have travelled a lot, TCK's rarely get the opportunity to create meaningful, long-lasting relationships, which results in many of them feeling as if they lose more than they gain from moving around so frequently. This sentiment of constantly abandoning a world that helped shape their personality generates a sense of grief, eventually leading to loneliness even when surrounded by a sea of people.

Leaving a life behind is not, however, the only reason why TCK's may feel lonely. During a TEDx Talk at Saint Louis University Madrid, Korean psychologist Jenny Kang described what she referred to as "cultural loneliness": she explained that since TCK's are often thrown or bred in a culture that is not their parents', they more often than not face difficulties with identifying with one. Kang states that "Cultural loneliness stems from third culture kids (TCK's) feeling like they have no solid sense of place, culture, or community." (Kang, 2018). They do not fit in the culture of their parents, nor with that of their host country. They feel like they do not make sense to others, that they are misunderstood and that they have no roots which, in most cases, sets them apart and causes their loneliness.

In the literary works studied in this essay, the characters do not belong to the same category of TCK's. On the one hand, there is Kasienka in *The Weight of Water* who grows up in Poland, her parents' passport country. At 12 years old, she moves to England with her mother to search for her father who abandoned them. The loneliness of being a TCK begins as she starts going to school where rejection along with her classmates' poor behaviour immediately attack her.

In her book, Crossan adopted the point of view of the protagonist to convey a clear understanding of Kasienka's thoughts. She starts by depicting the girl's journey to England then, after a few pages, begins to portray her immediate feeling of isolation : "I'm not welcome to play" (Crossan, 2012, p.17) says Kasienka as she watches the children around her mixing with all races except from hers. She suspects that they exclude her because she is from Poland, because she is "too



white" (Crossan, 2012, p.17), instantly assuming her race to be an obstacle in blending in. The feeling of loneliness she was bullied into follows her into the classrooms where, despite her teacher's efforts to help her, she is "Left sitting,/Desperately scanning,/Hoping to be considered" (Crossan, 2012, p.49). In her first few days of school, Kasienka is already singled out as a foreigner and is well aware of it.

In the same fashion, James Lee, from Ng's novel, is bred in a world where he is seen as nothing but "An Oriental" (Ng, 2014, p.31). As opposed to Kasienka who migrates from her country to another, he is born and raised in the United States but to Chinese parents. As he grows up, James is unable to connect with both the American culture and the Chinese one, therefore he belongs to the group of TCK's who have roots in neither their parents' country, nor the country in which they live. The feeling of loneliness strikes him in the early stages of his life and remains even after he enters adulthood:

"He had never felt he belonged here, even though he'd be been born on American soil, even though he had never set foot anywhere else" (Ng, 2014, p.40).

As can be seen, both characters experience the loneliness that is felt by most TCK's. The fact that they both live in an environment where racism and discrimination is frequent - Kasienka in a foreign secondary school and James in a judgemental era of America - makes their lives even more prone to the suffering of loneliness. Nevertheless, while they share a similar feeling of estrangement, there are differences in their respective situations. Kasienka's feeling of loneliness does not stem from within herself: her peers deliberately exclude her because of her nationality which makes her a victim of cultural estrangement, indeed, but mostly due to external forces. Although the fact that she is aware of her differences with others promotes likelihood to self-exclusion, she feels lonely mainly because the people around her openly reject her.

James, on the other hand, is never intentionally excluded by his environment. In school, his classmates display indiscreet skepticism, wondering where "this boy" (Ng, 2014, p.43) is from or why he does not look like them, but never do they



explicitly push him away. His self-consciousness is the primary reason for his loneliness. Knowing that his eyes are not shaped the same way as those of his peers, that his skin colour resembles none of theirs and that he is not a descendant of "a Pilgrim or a senator or a Rockefeller" (Ng, 2014, p.44) is what causes him to set himself apart. To an extent, he is the one who causes his loneliness, portraying the TCK's who feel like they do not belong in their host country, while Kasienka represents those who are not allowed to belong.

II. Identity struggle

Along with a complicated feeling of loneliness, struggling to find an identity is another prevalent issue for TCK's. Language, origins, nationality; many of the basic elements that constitute one's identity are confusing for these global nomads. Some TCK's are born to parents of different nationalities, making it difficult for them to explain both to others and themselves what nationality they identify with. Other TCK's are exposed to several different cultures because of the travelling required by their parents' job. Consequently, their identity is shaped by a unique combination of the cultures they have been subjected to, which again hinders their ability to find a place within one cultural group. According to Tajfel's social identity theory, "we adopt the identity of the group we have categorized ourselves as belonging to." (McLeod, 2008, paragraph 15). The fact that TCK's frequently lack that sense of belonging is what causes their trouble with finding an identity.

In *The Weight of Water*, an entirely Polish Kasienka is thrown into the English culture. Whether is it with regards to her physical appearance or her personality, she feels as if she does not resemble her English peers and assumes that is the reason for which she does not belong with them. This lack of a stable and welcoming community leads her to question who she, the real Kasienka, is: "If only I knew Kasienka's Kasienka: / When I search for myself in the bathroom mirror / I cannot find her at all." (Crossan, 2012, p.171).

Furthermore, she describes herself as having many identities she has to alternate between depending on the person she is with (Crossan, 2012, p.170), a



trait that TCK's commonly develop during their coming of age: Kang explains in her TEDx Talk that as a TCK, she switches identity depending on what is most convenient for her interlocutor. "When a Korean asks me where I am from, I say that I grew up in the U.S. to help them understand why I can speak English fluently. [...] To Americans, I answer by saying that I moved to the U.S. at an extremely young age and went to an international school in Korea." (Kang, 2018, paragraph 5). Similarly, Kasienka divides her identity between the different people in her life:

"One Kasienka is Mama's girl / The Kasienka who chew quietly / And sleeps with a teddy bear under her arms

Another Kasienka is Tata's pilgrim

[...]

She is also William's Cassie, / Shy-eyed and broad-backed." (Crossan, 2012, p. 170). As many other TCK's, this dependence on others to define who she is makes her lose sense of who she is as a person, not as a member of a group:

"When I am alone/I do not know who I am." (Crossan, 2012, p.171).

In light of this, it can be concluded that in order to find an identity, it is crucial for an individual to be part of a community. Because of their difficulty with finding a community to identify and stick to, TCK's often try to adapt their lifestyle to that of their current host country. A life of constant migration and changes leads to easy adaptability, a quality usually associated with TCK's. Therefore, it is common to observe TCK's mimicking the customs of the country they live in:

In *Everything I never told you*, James Lee is born in Northwest Ohio to illegal Chinese immigrants. He attends a local school where he is disregarded by his classmates because of his race. Growing up, he understands that Americans look at him differently because they see him as nothing more than an Oriental, while he considers himself an American because he was born in America. Therefore, in an attempt at being considered American, he decides to make life-long changes from a very young age:

He begins by refusing to come to terms with being Chinese, pushing back his roots to the point where "He had stopped speaking Chinese to his parents, afraid of



tinting his English with an accent" (Ng, 2014, p.48). In addition, he tells his mother to stop packing Chinese dishes for his lunch, claiming that "he'd rather eat what the other kids are eating" (Ng, 2014, p.205). Here it can be seen that James seems to link cultural practices - i.e. language and diet - with identity: he probably believes that doing what "the other kids" are doing will lead him to be categorised as one of those kids and help him find belonging amongst them.

Likewise, Kasienka from *The weight of water* tries to imitate English girls in order to win their admiration and hopefully be accepted as one of "them". In the chapter "The Hunt", Kasienka straightens her hair to look more like her classmates but is disappointed when she realises that "It isn't enough to impress them" (Crossan, 2012, p.87). Like James, she seeks belonging so she tries to reshape her identity by adopting her host culture's customs.

Both of the characters are portrayed in such a way that shows how much TCK's struggle with identity: because they live in a country that is not their own, they share a feeling of estrangement from their peers. A natural response to this estrangement is to adopt the characteristics of the culture in which they live to become a part of a community and base their identity on the customs of that community. Generally, TCK's are able to be at ease with themselves when part of a social group because due to changes in their environment, acquiring information that they can turn into knowledge becomes a complex process, affecting their ability to create a sense of self: "developing an understanding of "Who am I" – actually becomes impacted by the relocation" (Berger, 2014, paragraph 4). Without that sense of "being part of something", TCK's face the hardship of having to explain, not only to themselves but also to the outside world, who they are.

III. Search for emotional attachment

There are several reasons that can lead Third Culture Kids to struggle with finding a place to call "home". Many TCK's are expatriates' children which means that due to constant traveling, they have had a "home" in a lot of different countries.



Therefore, the sense of stability that is generally associated with a home is not tied to a geographical location. In like manner, TCK's who grow up in a country other than their parents' passport country have trouble with deciding what is their home: finding a culture to identify with is essential to create a sense of belonging (McLeod, 2008, paragraph 15) so TCK's who are genetically descendants of one culture but physically living in another wrestle with establishing a home. Research has for long been conducted to find where Third Culture Kids are most likely to feel at home. The most common response is "they form their sense of belonging around their relationships rather than particular countries" (Pogosyan, 2016).

Usually, for adults TCK's especially, home lies in the arms of their significant other. A survey conducted by Real Simple Magazine showed that almost 35% of 52 interviewees declared feeling at home wherever their husband or wife is. Having a romantic partner is particularly beneficial for TCK's because not only does it give them a sense of stability, but it also makes them feel accepted in a place where they might have been rejected for very long. (Jezmeralda, 2018)

In *Everything I never told you*, James was never accepted as an American by his neighbours and colleagues. He states that the only reason for which he finally begun to feel home in America was his wife, Marilyn:

"Coming home to her made him feel perfectly welcomed, perfectly at home, as he had never in his life felt before." (Ng, 2014, p.40).

She made him feel like he could be himself with her, like he was not an outsider but a man who was exactly where he needed to be. He fell in love with the sense of rootedness his wife provided him, a common trait of TCK's marrying monocultural people: a survey conducted by 30 year-old blogger known by her username Third Culture Mama demonstrated that many TCK's revelled in their spouse's sense of belonging. They rejoice in the fact that their husband or wife had life-long friends and that they could easily respond to the dreaded "Where are you from?" question (TCK's in marriage, 2017). Moreover, the results of the survey have shown that marriages of TCK's with monocultural people had a tendency to last longer than TCK with TCK, suggesting that indeed, TCK's seek an anchor, a way of attaching themselves to a place. Another study conducted on close to 700 American



adult TCK's showed that "most adult TCK's conform to what is going on around them in such a way that attention is not drawn to them" (Cottrell, Useem, 1999). This apprehension towards attention can be interpreted as TCK's need to blend in and be part of something which, as can be seen, this is often achieved through the deep and emotional relationship of marriage.

In the case of Kasienka from *The Weight of Water*, her need for human connection manifests itself in a sadder manner:

In the first few pages of the book, the reader discovers that Kasienka moves to Coventry with her mother to search for her lost father, who she refers to as "Tata". Even though it is clear that her mother's need for closure is the main reason the two women move to England, the loss and confusion that the young girl feels after her father's departure are evident in the letters she writes him:

"Mama loves you again;/she's sorry./Can't you be sorry too?/Then we can go back to Babcia,/back to Gdańsk,/home./Please, Tata." (Crossan. 2012).

Furthermore, the use of the word "home" in these lines suggests that Kasienka does not immediately associate it with Gdańsk, her native town, but rather with Babcia, her grandmother. During the course of the story, Babcia comes to visit Kasienka and her mother in England for a few days, giving the reader a glimpse of the close relationship the girl and her grandmother entertain. The fact that Kasienka links this important woman in her life with the emotional feeling of a "home" verifies the theory that for children who have been living abroad, home suggests an emotional place (Faye, 2016), a place associated with profound relationships.

In summary, it can be settled that TCK's establish their home in the place where they have created significant emotional relationship. While these relationships mostly involve family members, friends and lovers are also crucial to a TCK's life.



Conclusion

All in all, it has been observed that most of the aspects that shape the life of a Third Culture Kid can be found in both the debut works of Celeste Ng and Sarah Crossan. Loneliness, identity struggle and the need for emotional attachment are all feelings undergone by Kasienka and James.

The similarities between their ways of coping with exclusion are numerous: for *Everything I never told you* gives the reader flashbacks about James' childhood, it is possible to see how both he and Kasienka as children try to imitate their classmates' customs in an attempt to belong. However, the changes that they impose on themselves are noticeably different: Kasienka, being completely new to the English culture, believes that if she physically looks like her peers, she will be able to fit in. She straightens her hair and shaves her legs, thinking it will be enough to impress the girls who bully her. James, on the other hand, realises after having grown up amongst Americans that his whole lifestyle needs to be altered in order for him to even get a chance at being considered American. He decides to eat American food and to speak with an American accent, rejecting all aspects of his Chinese origins while Kasienka only wants to appear English on the surface.

This shows that alienation can impact on TCK's with various severities: some will only be willing to modify a few of their attributes to resemble the host culture's people, most likely if they are not knowledgeable about said culture. Others, like James, might despair in their loneliness to the point where they would give up all that makes them unique for the sole purpose of belonging. As can be seen, the circumstances that make someone a Third Culture Kid greatly influence the intensity of that person's feeling of estrangement and therefore the way that they react to it.

Another major difference between the two characters is that Kasienka is a 12-year-old girl while James, at the time where the story is set, is a grown up father of three children. This is significant in the analysis because it allows the reader to



understand the reasons for the two TCK's' behaviour: Kasienka, still young with a growing understanding of the world, primarily feels lonely because her classmates reject her company. While she is aware of the contrasts between her and her peers, she does not let it be a reason to exclude herself from others but rather, tries relentlessly to get others to notice her. James, however, having had time to mature, responds to estrangement in a more resolved manner, as if he had come to terms with the fact that people were never going to accept him. He adopts the American lifestyle in order to go unnoticed by all, not to get attention from the host culture like Kasienka.

Indeed, Third Culture Kids all have unique stories. It is not untrue to say that they resemble each other in some ways, but it is crucial to realise that their lives also differ, from the events that led them to become TCK's to their reactions to the downfalls of belonging to this category of people. Some may experience the sorrow of leaving their country of birth to settle in an unwelcoming environment. Others may be born and raised in a place where they are not able to feel like they fit in. Many TCK's spend so much time traveling that they find themselves feeling like outcasts when they come back to their passport country, finding out that they struggle with deciding where a "home" lies. James and Kasienka are just mere examples of what a Third Culture Kid's struggle can look like. The several other issues of being a TCK need to be studied and understood if there shall ever be a chance of ensuring a future where everyone feels accepted, considered, but most of all, that they belong.



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TO WHAT EXTENT DOES AI WEIWEI'S ARTWORK REPRESENT THE CONCEPT OF 'PROTEST' THROUGH ANTI-TRADITIONAL MEANS?



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Introduction

Protest art has existed from the beginning of the Industrial Revolution until now as a way for artists to express their own opinions. It is the visual representation of protesting a particular political stance in relation to issues at that time. It is often used by artists to represent the social marginalization of women, people of colour and other minorities in order to show the world how discrimination and dictatorship affects regular citizens. One of the artists who demonstrates against these inequalities is Ai Weiwei.

Ai Weiwei has become somewhat of a phenomenon over the last decade with his never-ending stream of art that is meant to shock, criticise or send out a message to the public, which is in correlation with the artistic theme of protest. Ai mostly comments on the current situation regarding his home country of China, with the breaking of ancient values and the mistreatment of the Chinese people. He has also made several works of art protesting on the opinion of major countries on that of refugees and migrants, that they refuse to give them humanitarian aid. His work criticises governments for destroying cultural values and having a disregarding, protesting not only about China but the rest of the world too. Ai Weiwei uses anti-traditional means (such as using ancient Han dynasty pots) for making his artwork in order to successfully protest for his opinion to be heard. This essay will analyze to what extent Ai uses these means in order to convey 'protest'. Ai Weiwei himself has written books and articles for The Guardian, which has been a source of



inspiration for answering the argument. The essay also looks at other people's opinions of the artwork to give a scope on exactly how he uses these anti-traditional means.

This research question is worthy of investigation because it seeks an analysis of exactly how Ai Weiwei uses special techniques in order to convey the theme of protest. He is one of the most well-known artists of the modern world, and continuously brings new contributions to the world of art, and is therefore valid for further analysing. The sources used came from art websites and credible articles about Ai Weiwei and his work to make a proper artistic analysis of his work.

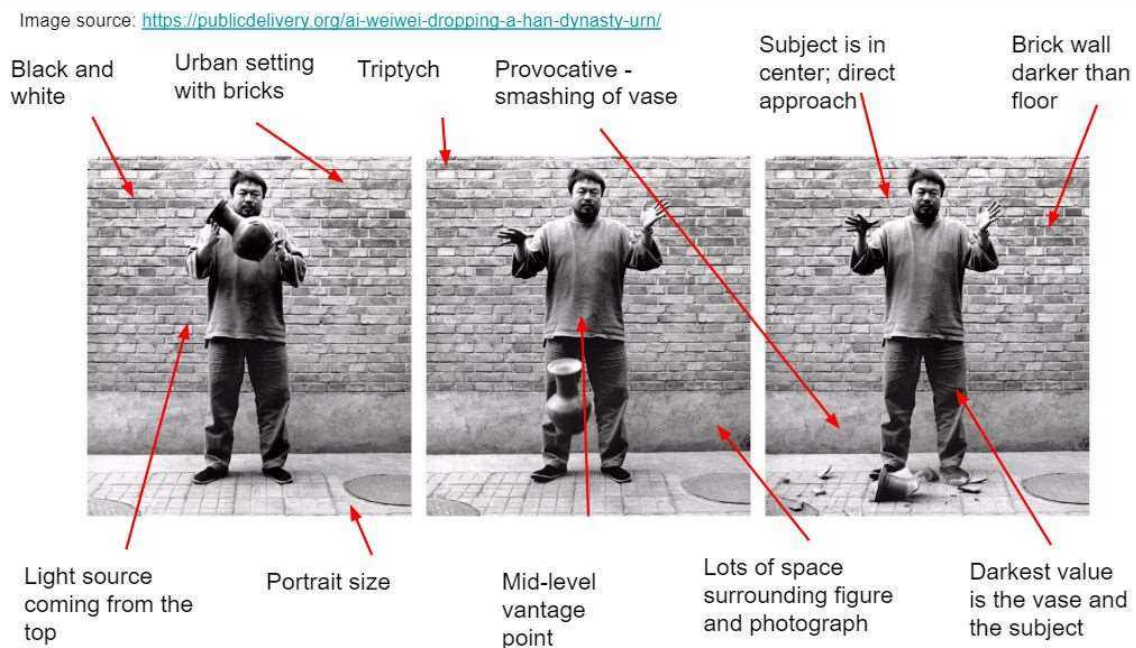


Works against ancient Chinese art - 'Dropping a Han Dynasty Urn'

It is said that Ai Weiwei's 'Dropping a Han Dynasty Urn' is his most controversial piece of work that has raised many questions and bought about a range of opinions.¹

In 1995 he dropped an ancient Han dynasty urn and captured it in a series of three

Formal analysis of 'Dropping a Han Dynasty Urn'



2

stills called a 'triptych'.³ The urn was also valued at one million dollars, and Ai had not only broken one of these, but two, as his photographer didn't accurately capture the first breakage.⁴ Some people⁵ believe that by doing this he is rejecting Chinese

¹ <https://publicdelivery.org/ai-weiwei-dropping-a-han-dynasty-urn/>

² <https://www.guggenheim.org/arts-curriculum/topic/ai-weiwei>

³ <https://www.guggenheim.org/arts-curriculum/topic/ai-weiwei>

⁴ <https://publicdelivery.org/ai-weiwei-dropping-a-han-dynasty-urn/>

⁵ <http://artasiapacific.com/Magazine/78/DevastatingHistory>



values and the rules and regulations of the government.⁶ They think that this piece of work is a direct attack against those in the government who remove the right of free speech from the people. Some people also believed the piece to signify the little importance the world places on artwork.⁷ Although people may have many differing opinions on the subject of this artwork, Ai's intentions behind this differ from what everyone thinks. His true intention behind this was to show how Mao wanted to destroy anything to do with ancient Chinese culture, and how he used to say that 'the only way of building a new world is by destroying the old one'.⁸ By saying this, he is essentially attacking Mao's old principles and the ways of the Communist government's restrictions on creative freedom. This is significant as Ai's father Ai Qing was a poet who had been exiled to work in a labour camp during the Cultural Revolution because of Mao's hatred towards intellectuals and elites, showing that his possible implied dislike of the Chinese government has deeply rooted origins.⁹ Although it can be said that Ai may partially agree with Mao by referencing his quote, as he is implying that in order to create a free China, getting rid of the Communist regime is necessary.¹⁰ Coming back to the earlier point of how some people believed the photographs to be undermining heritage preservation, since it gained so much popularity and controversy it has actually put the subject of ancient China in more light, as more people become aware of its importance.¹¹ This can be thought to be one of Ai's main goals when it comes to the significance of his artworks.¹²

⁶ <http://artasiapacific.com/Magazine/78/DevastatingHistory>

⁷ <https://www.guggenheim.org/arts-curriculum/topic/ai-weiwei>

⁸ <https://www.popmatters.com/182198-ai-weiwei-truth-and-beauty-2495655383.html>

⁹ <https://www.galleriacontinua.com/artists/ai-weiwei-77/biography>

¹⁰ <https://publicdelivery.org/ai-weiwei-dropping-a-han-dynasty-urn/>

¹¹ <https://www.guggenheim.org/arts-curriculum/topic/ai-weiwei>

¹² <https://publicdelivery.org/ai-weiwei-dropping-a-han-dynasty-urn/>



Coloured Vases



Image source: <https://www.pinterest.com/pin/413979390719514211/2lp=true>

'Coloured Vases', created in 2006 is series of 51 vases from the Neolithic ages that have been dipped in paint and turned around to make it drip that is currently on display in the San Francisco Museum of Modern Art in California.¹³ Visitors of exhibition recount that they felt 'pain' when they saw all the ancient vases that had been, in their eyes, desecrated.¹⁴ However, Ai's intent for this was vastly different than what people believed. One of the aspects was that the vases were not entirely covered in paint; either the bottom, the middle strip or the interior was left as the original artist had made it. This was done to show the disparity between the old and

¹³ <https://medium.com/@liusij87/ai-weiwei-colored-vases-64ce00bb90d5>

¹⁴ <https://medium.com/@liusij87/ai-weiwei-colored-vases-64ce00bb90d5>



the new, and still show a bit of the history underneath,¹⁵ all of this to reinforce his point about the devastation Chairman Mao caused during the Cultural Revolution, how he convinced people that destroying the old was necessary.¹⁶ Ai felt that a huge part of Chinese culture was lost during that time as books and works of art were burned, and freedom of expression was greatly limited.¹⁷ 'Colored Vases' was created to show the new, the bright and the garish while also appreciating the value of history.¹⁸ In this sense, Ai is using the irony of defacing ancient vases with wanting to show how important ancient Chinese culture is to challenge the viewers assumptions about his work.¹⁹

Coca-Cola Vase

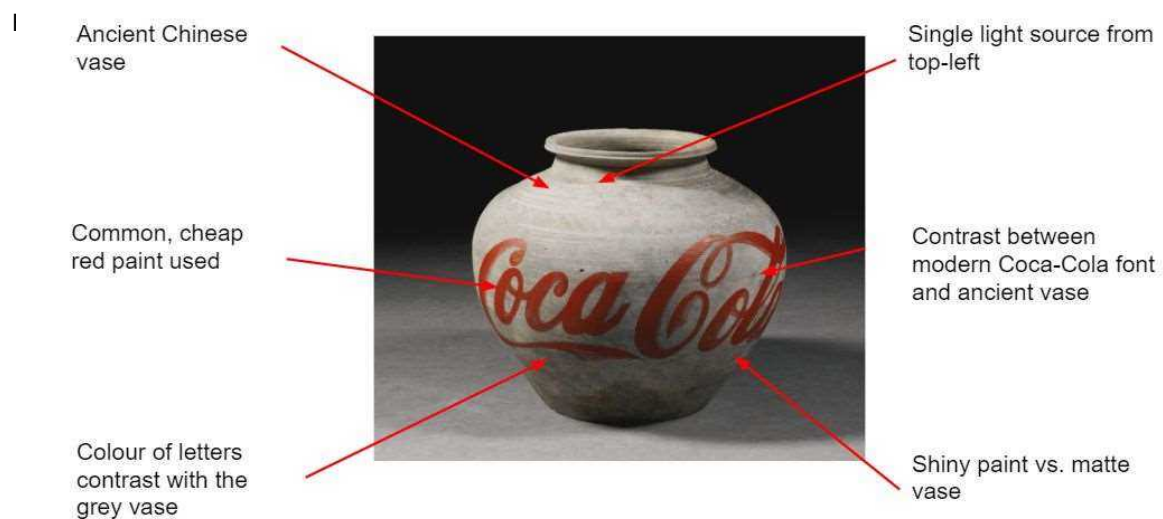


Image source: <https://www.pinterest.com/pin/784611566303332619/>

¹⁵ <https://discover.stqry.com/v/ai-wei-wei:--colored-vases/s/89931eed1358823760d0ebb6b98f6ad2>

¹⁶ <https://publicdelivery.org/ai-weiwei-coloured-vases/>

¹⁷ <https://www.royalacademy.org.uk/article/ai-weiwei-beginners-guide>

¹⁸ <https://medium.com/@liusij877/ai-weiwei-colored-vases-64ce00bb90d5>

¹⁹ <https://publicdelivery.org/ai-weiwei-coloured-vases/>



'Coca-Cola Vase', created in 2011, is a series of ancient Han dynasty vases repainted with the Coca-Cola logo symbol.²⁰ Ai Weiwei's core intention behind this iconoclastic piece was to show that China's meddlings with the West could have major consequences, as is portrayed by the symbol of destruction on culture through repainting the old vases with a major logo.²¹ He wanted to highlight the dangers of consumerism and globalisation on a nation's inherent culture.²² Although many people may believe this to disregard ancient Chinese values, Ai actually intended to show the government's disregard for cultural values through the use of defacing something ancient with something modern, which certain people who value cultural traditions who would view it as being 'anti-traditionalist'. The logo was also painted on by hand and not printed like the mass-produced Coca-Cola cans, which shows that Ai gives importance to the subject of human craft, exactly how they used to make objects in ancient times.²³ There is also a similarity between the old and the new in this piece; the vases that Ai painted on were actually mass produced in ancient China, just like the Coca-Cola symbol. So although the vase still holds archeological value, there is a connotation between it and the logo it has been emblazoned with.²⁴

²⁰ <https://www.artbasel.com/catalog/artwork/23268/Ai-Weiwei-Coca-Cola-Vase?blLocaleCode=en>

²¹ <https://www.metmuseum.org/art/collection/search/78215>

²² <https://www.phillips.com/detail/AI-WEIWEI/NY010714/4>

²³

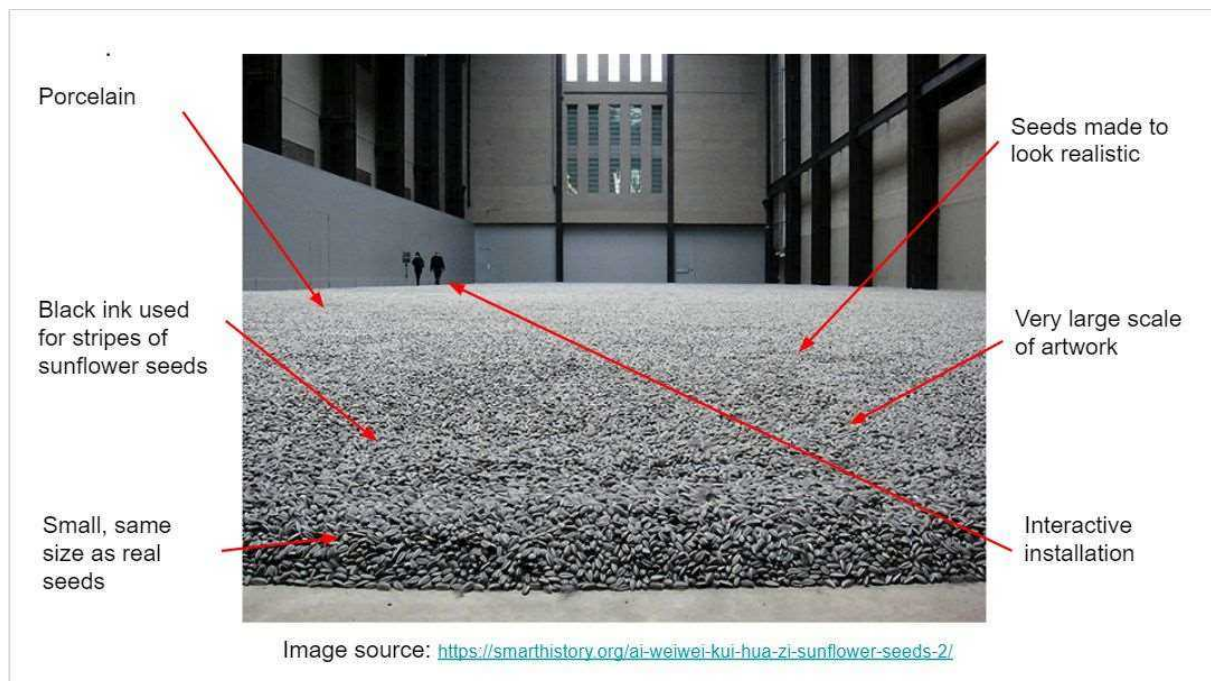
<http://www.sothebys.com/en/auctions/ecatalogue/lot.56.html/2014/contemporary-art-evening-auction-14024>

²⁴

<http://www.sothebys.com/en/auctions/ecatalogue/lot.56.html/2014/contemporary-art-evening-auction-14024>



Sunflower Seeds



Many of Ai Weiwei's other works prove that he in fact values and respects the traditions of ancient China.²⁵ An example of this would be Sunflower Seeds. It is a series of millions of porcelain sunflower seeds that were each hand crafted by professionals in the Chinese town of Jingdezhen, which used to produce porcelain for the Chinese Empire.²⁶ They were all made using traditional techniques of fabricating porcelain and painting on them with ink and brush by hand.²⁷ Porcelain is one of China's biggest trades and the fact that these were hand-crafted is a

²⁵ <https://www.dezeen.com/2010/10/11/sunflower-seeds-2010-by-ai-weiwei/>

²⁶ <https://www.khanacademy.org/humanities/ap-art-history/global-contemporary/a/sseeds-ai-weiwei>

²⁷ <https://www.youtube.com/watch?v=PueYywpkJW8>



statement against China's manufacturing.²⁸ The project gave jobs to 1600 people in a town where most people had gone bankrupt and valued the tradition of porcelain making, showing that Ai actually cares about the ways of ancient China, unlike how some people might believe.²⁹ Through this, he is protesting the old culture of China that the government is trying to suppress.

Documentaries - 'So Sorry'

'So Sorry' is a documentary created by Ai Weiwei in 2012 in regards to the student lives lost in the Sichuan earthquake of May 2008 and of his own personal assault by the Chinese police.³⁰ The 'tofu-dreg' schools were the reason why so many school children died, as they ended up collapsing on the students during the earthquake. This was the result of poor construction work created in rural areas in order to save money, and these constructions were mostly for schools as it was difficult for poor villages to fund better buildings.³¹ The Chinese government gave out the number of casualties, which was around 5,000 at the time, however citizens suspected that this wasn't the whole truth and that the casualties were higher³², and Ai Weiwei's aim was to find the true numbers and to expose the government for having lied to the public. Because of this, him and many others that were part of the investigation were harassed by police and government officials, and in his case he was beaten in his hotel room and suffered a brain hemorrhage as a consequence. This was the

²⁸

<https://www.tate.org.uk/whats-on/tate-modern/exhibition/unilever-series/unilever-series-ai-weiwei-sunflower-seeds>

²⁹ <https://www.youtube.com/watch?v=PueYywpkJW8>

³⁰ <https://www.youtube.com/watch?v=MrL8WIHplqo>

³¹ <https://chinadigitaltimes.net/2008/05/a-construction-engineers-thoughts-in-the-sichuan-earthquake/>

³²

<https://www.theglobeandmail.com/servlet/story/LAC.20080616.CHINA16/TPStory/TPInternational/Asia/>



beginning of the true tension between Ai and the Chinese government.³³ He accurately captures the severity of the earthquake situation by featuring gruesome clips he took himself of mothers crying and parents carrying their dead children away from the scene of collapse. These scenes are meant to directly target the ineffective ways of the government and to expose their true nature, as it was the fault of their construction that this happened. In regards to his assault, he included the audio recording of his encounter with the police and of his assault, and also included video footage of each of the police's faces once he had come back from surgery in Munich.

³⁴ The casual, shaky film style of this documentary shows that none of the events shown were planned, and that him and his crew were simply recording their surroundings. All of this further adds to the exposure of the government and their ways, as anyone who watches this and understands Ai Weiwei's story will see the gruesome truth behind the way the Chinese government handles situations. In this sense he is going directly against the values of the leaders of his country and anyone in this position, therefore, would find the documentary offensive. Citizens who are loyal to the government would also find this shocking, as it disrupts their belief of everything they know regarding their country's leaders. However, those from outside of China and the Chinese who despise the government would agree with this documentary. Therefore, the level of offense of this film would be limited only to China and not to the rest of the world, unlike many of his fine art pieces.

³³ <http://artasiapacific.com/Magazine/66/AiWeiweiHospitalizedAfterBeatingByChinesePolice>

³⁴ <https://www.youtube.com/watch?v=MrL8WIHplqo>



Ping'an Yueqing

In 2011, Ai Weiwei produced a documentary based on the alleged murder of fishing village Yueqing leader Qian Yunhui.³⁵ The subject was protesting against the governments' construction plans on the village marshland, and during this time he was detained on multiple accounts in order to stop his protests, before being run over by a truck in a so-called 'traffic accident'. The rest of the village believed that



³⁶

this was in fact not an accident but deliberate murder by Chinese officials to silence Qian Yunhui once and for all.³⁷ This documentary is one of many that Ai Weiwei has produced in regards to investigating suspected murder, cover-ups or corruption involving the Chinese government and aims to raise awareness of these issues through the style and spreading of these documentaries. Many of his films, including

³⁵ <https://vimeo.com/157501730>

³⁶ <https://vimeo.com/157501730>

³⁷ <https://www.nytimes.com/2010/12/29/world/asia/29china.html>



Ping'an Yueqing, work on capturing the audience's attention through the use of provocation, graphic and emotional scenes. For example, in the beginning of Ping'an Yueqing, Qian Yunhui's father is seen shedding tears over his lost son and singing the Chinese Communist anthem, praying that someone take revenge for his son. This prompts the audience to find out what happens in regards to the investigation, and are then shocked to see graphic photographs Qian Yunhui's death, with his head

almost severed under the truck and his internal organs spilling out.³⁸ Ai also includes many facts in regard to the actual investigation. For example, Qian Yunhui was making a call when he walked into the road, however all traces of the call had been erased. The truck had been driving on the wrong side of the road, allegedly because of road works and traffic cones, however in video evidence from the truck's journey there were no cones on the road and therefore no reason the drive on the wrong side. The footage of the accident from the security camera had also been erased and the details of the truck's speed and it's distance from Qian Yueqing before breaking were covered up.³⁹ In addition, many of the villagers were detained for 50 hours at a time, given no food and beaten for having claimed the incident to be murder.⁴⁰ Ai Weiwei included all of this information in his documentary for one purpose: to expose. He wanted to expose the Chinese government for all the cover-ups and detainments, and to show the world how the ways of the Chinese officials are harming the ordinary citizens of China. This documentary is offensive to

³⁸ <http://povmagazine.com/articles/view/review-pingan-yueqing>

³⁹ <http://cinemaontheedge.com/pingan-yueqing/>

⁴⁰ <https://vimeo.com/157501730>



the government, however to regular people it is more provocative. On the one hand, Ai is raising awareness towards the corruption in China, but on the other he is endangering the lives of the film crew involved in the documentary and also the lives of the villagers interviewed, as many of them did not want to be filmed in the risk that they would be arrested or 'taken away in the night'. Indeed, many of the villagers were detained after the documentary came out. So although Ai Weiwei may be producing these documentaries for a good cause, there are ethical concerns to be dealt with regarding the safety of the people involved.

Stay Home

'Stay Home' is another one of Ai Weiwei's documentaries, except that this one is made in a slightly different style.⁴¹ It tells the story of Liu Ximei, who was born outside

the one-child policy and had to be given away to relatives. When she was ten years old, she was in an accident in the fields where her hair got stuck in machinery and ripped off her scalp.⁴² She then had to get blood plasma treatment for it and was infected with HIV as a result. There is allegedly over 850,000 people in China who have contracted AIDS government issued plasma, with Liu being one of them. The documentary is not created as one of Ai Weiwei's usual documentaries; it has a more biographical style rather than an investigative style, which would be typical for an Ai Weiwei documentary. It shows Liu as a grown woman going about her day to day life, which include the hardships of having HIV, and it shows not only her

⁴¹ https://www.youtube.com/watch?v=_AHreUWqvwc

⁴²

<https://www.hivplusmag.com/stigma/2014/08/27/watch-activist-ai-weiwei-looks-fellow-chinese-dissidents-life-aids>



struggle but the struggle of others with the disease as she set up a home for HIV infected people named 'Ximei's Home For Mutual Help'. Ai did not use any graphic imagery or provocative scenes in the documentary, but rather made it a simple and truthful account of Liu's life. This has a different effect on the audience, one that leads more towards sympathy and sadness rather than shock and anger. Through this documentary Ai Weiwei has shown a more personal side of the government's poor regulations, and the day-to-day struggles that arise because of it.

Ai Weiwei today

After years of having created artworks that criticise the ways of the Chinese government, Ai Weiwei has recently moved on to making artistic statements about the world refugee crisis, the worldwide obsession with borders and anti-immigration and the issue of humanitarian rights. At a press conference at the 'Semana Internacional de Cine de Valladolid' Ai said that 'refugees deserve our attention' and that 'all people have rights'.⁴³ In an article he wrote for The Guardian, he described how the refugee crisis of today hit close to home as his family were once refugees because of the Cultural Revolution and the fact that his father was a poet, which went against Chairman Mao's ideology.⁴⁴ These factors prompted him to make art and documentaries that showed worldwide refugees, such as 'Law of the Journey' (2017) and 'Human Flow' (2017). Because of his passion as an activist for human rights and his own personal background as a refugee, Ai Weiwei had strong feelings towards the crisis which prompted him into taking action through his art and moving

⁴³ <http://seminci.es/en/ai-weiwei-the-cry-against-the-refugee-crisis/>

⁴⁴

<https://www.theguardian.com/commentisfree/2018/feb/02/refugee-crisis-human-flow-ai-weiwei-china>



on to a more global aspect of human rights. Through this he is challenging the right-wing nationalists of the world who believe in borders and not accepting refugees and immigrants, thus protesting his opinion on the matter.

Law of the Journey

In 2017, after having visited 23 countries and 40 refugee camps for his documentary 'Human Flow', Ai Weiwei created an art installation consisting of a 70 metre long inflatable black boat which carried 258 faceless refugee figures.⁴⁵ The material of the boat had been made in the factory where refugee boats are made,⁴⁶ giving further significance to the piece. He originally made it to have a place in the National Museum of Prague in the Czech Republic, targeting the countries refusal to accept refugees.⁴⁷ After being showcased in Prague the giant boat made its way to Australia at the Sydney Biennale exhibition. Australia similarly also has a history of refusing refugees, particularly boats that come from Indonesia. This is a direct criticism of Australia's policies, and also about the offshore detention centre of Nauru and the

⁴⁵ <https://hypebeast.com/2017/3/ai-weiwei-law-of-journey-exhibition>

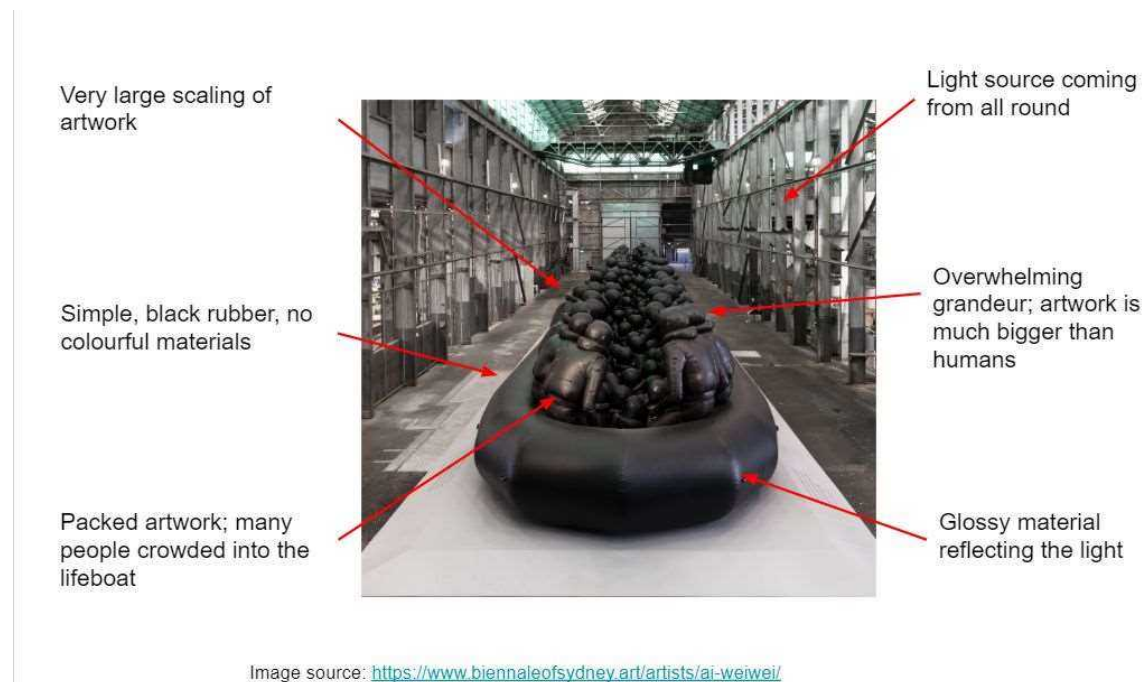
⁴⁶ <https://www.biennaleofsydney.art/artists/ai-weiwei/>

⁴⁷

<https://www.theguardian.com/artanddesign/2018/mar/12/ai-weiwei-on-the-us-australia-refugee-deal-it-s-exactly-like-slave-trading>



Formal analysis of 'Law of the Journey'



closed Manus Island Regional Processing Centre in Papua New Guinea.⁴⁹ Through this work of art and its destinations, Ai Weiwei is sending out a message to all countries who do not take in refugees, telling the world that 'the refugee crisis isn't

⁴⁸ <https://www.biennaleofsydney.art/artists/ai-weiwei/>

⁴⁹

<https://www.theguardian.com/artanddesign/2018/mar/12/ai-weiwei-on-the-us-australia-refugee-deal-it-s-exactly-like-slave-trading>

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about refugees. It's about us'.⁵⁰ His purpose is to raise awareness about the importance of having humanity and compassion towards refugees, and to call out specific countries for not abiding to this. Because of the political and provocative nature of this message, it gives rise to mixed opinions from the public, however since it is an act of activism it cannot be considered offensive per se, as it is not mocking or belittling the Czech or Australian governments, but simply making a statement against one of their policies. Through using an anti-traditional material such as black rubber made for boats he is protesting the situation with refugees.

@Large

In 2014, Ai Weiwei was invited to create an exhibition on the prison island of Alcatraz by the For-Site Foundation and it includes such works as With Wind, Trace, Refraction, Stay Tuned, Illumination, Blossom, and Yours Truly.⁵¹ Almost all of the prison buildings were used for this exhibition, most of which had previously been closed to the public. The main theme of the artworks presented was about liberty and justice, and featured the names and faces of many political activists around the world, who had been imprisoned for speaking out about their country's corrupt policies. This can be seen in the gigantic lego artworks of 'Trace' which features portraits of these dissident prisoners. Another example can be named as 'With Wind', a gigantic Chinese paper dragon spanning the New Industries building on Alcatraz, with quotations from imprisoned activists. Ai Weiwei has said that the dragon represents 'personal freedom'. Among the other works in the exhibition

⁵⁰

<https://www.theguardian.com/commentisfree/2018/feb/02/refugee-crisis-human-flow-ai-weiwei-china>

⁵¹ <https://www.for-site.org/project/ai-weiwei-alcatraz/>



featuring political prisoners, there is also 'Yours Truly', which was presented in the dining hall and was where visitors could write individual postcards to the prisoners.⁵² Each postcard was adorned with the national birds of each prisoner's country and visitors were given the freedom to write any message they felt like.⁵³ Ai Weiwei says that when he was imprisoned loneliness was the worst feeling he had, as he was kept in isolation, which prompted him to create this feature of the exhibition.⁵⁴ Indeed, this did lift the spirits of political prisoners, with an account from former CIA worker John Kiriakou saying 'those postcards really kept my spirits up'.⁵⁵ Through this exhibition on Alcatraz, Ai Weiwei sought not to directly criticize any government policy, but simply to raise awareness about freedom of speech, basic human rights and liberty. As over 890,000 visitors came to Alcatraz for the exhibition and over 90,000 postcards were sent,⁵⁶ setting up an exhibition in a prison is not a traditionalist move, therefore it is protesting against the inhumane treatment of prisoners.

Human Flow

In 2017, Ai Weiwei created the German-produced film Human Flow, which focuses on giving an account of the lives of refugees in the modern world.⁵⁷ After having

⁵²

https://books.google.com/books/about/Ai_Weiwei_Yours_Truly.html?id=rY5iDwAAQBAJ&source=kp_book_description&redir_esc=y

⁵³ <https://www.for-site.org/project/ai-weiwei-alcatraz-yours-truly/>

⁵⁴ <https://www.for-site.org/project/ai-weiwei-alcatraz-yours-truly/>

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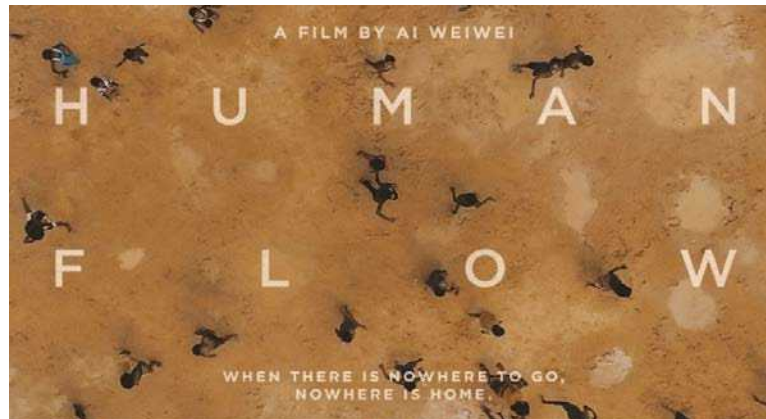
https://books.google.com/books/about/Ai_Weiwei_Yours_Truly.html?id=rY5iDwAAQBAJ&source=kp_book_description&redir_esc=y

⁵⁶ <https://www.for-site.org/projects-notes/large-attendance-accolades-and-impact/>

⁵⁷ <https://www.humanflow.com/synopsis/>



received his passport from Chinese authorities Ai went on a trip to Lesbos in Greece with his family, and he was shocked to find just how many refugees were arriving to the island, which prompted him to film some scenes then create the documentary.⁵⁸ Him and his crew visited 23 different countries and 40 refugee camps, and filmed the lives of those living there.⁵⁹ To give a humanitarian perspective on the crisis, the film



shows the faces of many refugees individually, while also interviewing them so they can share their feelings. UNHCR workers were also interviewed to give insights into the politics of the situation, making the audience realise the gravity of the situation. Ai Weiwei's intention with this was to raise his own awareness in regards to humanity, saying in his director's statement at the Venice Biennale that 'Human Flow is a personal journey, an attempt to understand the conditions of humanity in our days'.⁶⁰ He also wanted to raise public awareness of the crisis and make people understand the severity of the situation.

⁵⁸

<https://www.scpr.org/programs/the-frame/2017/10/20/59116/human-flow-ai-wei-wei-s-doc-is-about-more-than-the/>

⁵⁹

<https://www.dw.com/en/ai-weiweis-human-flow-and-11-other-memorable-films-on-refugees/a-41392629>

⁶⁰ <https://www.labiennale.org/en/cinema/2017/program-cinema-2017/ai-weiwei-human-flow>



Conclusion

Since the beginning of his career, Ai Weiwei has created art with the objective of sending out a message or criticising a particular government policy. Believing art be a way of communicating with people, he continues to work with this practice in the pure intention of raising awareness towards human rights issues. Because of how he often destroys, changes or alters ancient Chinese pots and vases (a non-traditional means of making art, as it involves destroying something as well creating something else) he successfully sends out his messages by shocking people. This brings public attention to his work and therefore raises awareness towards what he is protesting for or against. By using anti-traditional means, Ai Weiwei successfully protests his opinion as it inspires offense in some and inspiration in others, such as with the co-director of Human Flow Chin-Chin Yap, who was inspired by his work to continue to protest against the treatment of refugees and the humanitarian situation in China. By using these non-traditionalist ways Ai is setting an example to the world of how not to tolerate the way governments treat regular citizens, therefore inspiring protest in others. Therefore, Ai Weiwei uses anti-traditionalist means to convey 'protest' to a great extent.

This essay acknowledges that this is one of many interpretations about Ai Weiwei's work and that art is subject to differing opinions, being ultimately that interpretation of art is in the eye of the beholder and could be challenged by views believing that his work is not anti-traditionalist.



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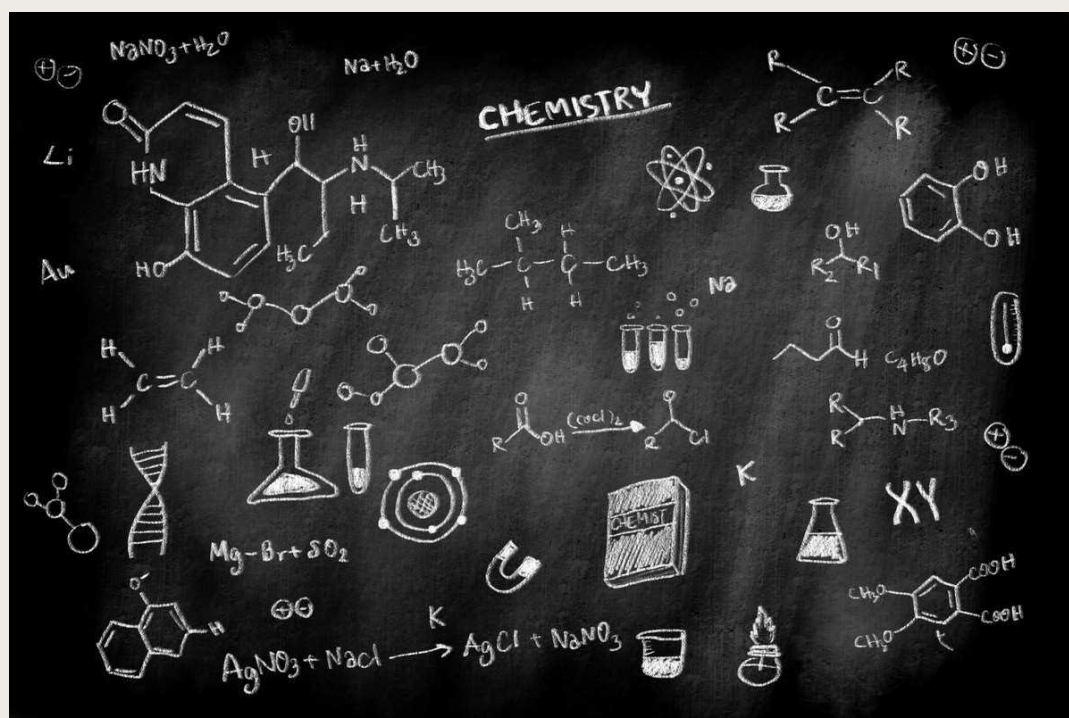
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HOW DO AROMATIC AND ALIPHATIC HYDROCARBONS ACT AS SOLVENTS FOR OIL BASED EXTERIOR PAINTS IN TROPICAL CLIMATE CONDITIONS?

CHEMISTRY



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Introduction

Oil-based paints are widely used for surface coating because they act as a film forming agent. In the 1920's alkyd¹ resin oil-based paint was one of the most important paints and it took over the Tempera paints. The alkyd resin has become important to newer polymer² systems. Oil-based paints are made of unsaturated oils such as esters and some metal ions.

Paint is a substance that is made to either protect, glisten or color to the outer layer of any medium. It contains pigments, the soul physical entity, because it contributes color towards the paint itself. Paint also contains binders. They make pigments easier to apply by sticking the pigment particles together and offer other paint properties such as durability, toughness and gloss. The last essential ingredient is the solvent. They are the liquids that suspend the binder to make it less viscous and easier to apply on a surface.

Some hydrocarbons can be used as solvents. Hydrocarbons are carbon and hydrogen containing compounds that vary from small to very long chains. Some are aromatic and others are aliphatic.

Aromatic compounds are molecules that have a ring of benzene. Petroleum refining industries make these solvents from chemical processes such as distilling petroleum stock, catalytic hydrogenation, alkylation etc. There are many usual aromatic hydrocarbon solvents used in paints and coatings. Toluene is one of them (chemical name: methylbenzene).

Aliphatic hydrocarbons do not have a benzene ring. These substances can be a combination of saturated, long, branched chains or cyclic structures. Most are saturated, because they contain the greatest possible number of hydrogen atoms, and so having no carbon-carbon double or triple bonds. They are produced by the fractional distillation of crude oil, then they're developed further to improve the color and odor. E.g. Acetone (chemical name: Propane).

¹ Alkyd- A durable synthetic resin widely used in paints

² Polymer-a naturally occurring or synthetic compound consisting of large molecules made up of a linked series of repeated simple monomers



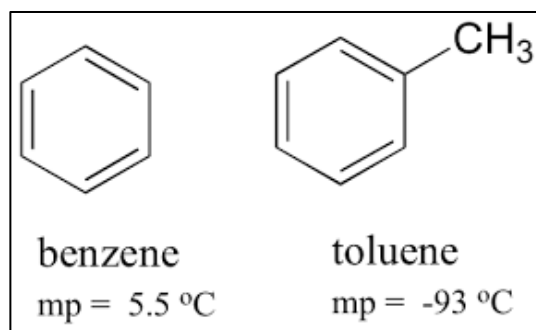
1 Research and Discussion

1.1 Toluene

Toluene is a colorless and water-insoluble liquid which is widely used as a paint thinner. It is derived from benzene and has a methyl (CH_3) functional group attached which gives the molecule its name, methylbenzene. This aromatic hydrocarbon can be derived at lower levels of fractional distillation of crude oil at higher melting points. Strong intramolecular structure of methylbenzene is the reason for its high boiling point. It is also a byproduct of the production of coke from coal. Toluene is produced from the fractionated extraction of light oil from coke.

Toluene is more reactive to electrophiles⁶ due to the methyl group's greater electron-releasing properties than a hydrogen atom. It can undergo many reactions such as aromatic sulfonation, halogenation, deprotonation etc. The methyl side chain in toluene is capable of oxidation. That makes the methyl vulnerable to halogenation under free radical conditions. They do not easily break apart while reacting with other substances.

Figure 1.1 and Figure 1.2. The Structural formula of the benzene derivative structures of aromatic hydrocarbons:



Source: Chemistry libretexts. (2017). 2.5: *Solubility, melting points, and boiling points*. Retrieved from <https://chem.libretexts.org/@api/deki/files/4710/image145.png?revision=1>

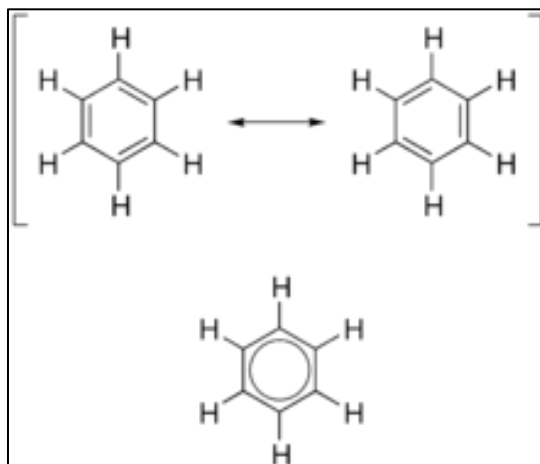
The term aromatic means that it is derived from the molecule of benzene because most aromatic compounds form from this intermolecular structure. "Aromaticity is used to describe a cyclic, planar molecule with a ring of resonance bonds that exhibits more stability than other geometric or connective arrangements with the same set of atoms" (Hofmann, 2017). "Resonance in bonding is a method used to describe delocalized electrons within certain molecules where

⁶ Electrophile- A compound or functional group that is attractive to, and accepts electrons, especially accepting an electron pair from a nucleophile to form a bond



the bonding cannot be expressed by one single Lewis Structure" (Chemistry, 2017). (Shown in **figure 1.4**)

Figure 1.4 Alternating structure of an aromatic hydrocarbon



Source: Bonding in benzene - the Kekulé structure. (2013). Chemguide.co.uk. Retrieved from [//www.chemguide.co.uk/basicorg/bonding/benzene1.html](http://www.chemguide.co.uk/basicorg/bonding/benzene1.html)

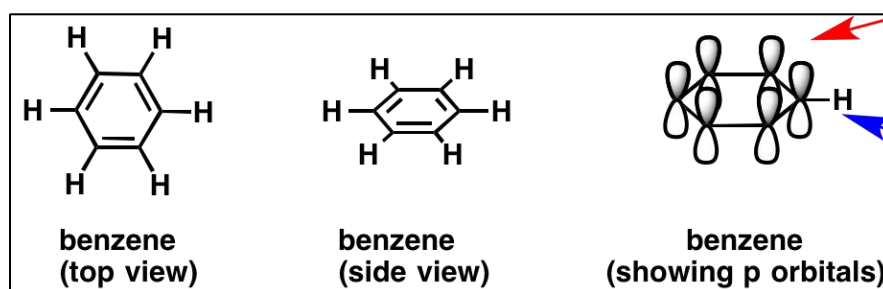
Aromatic molecules have an electronic nature of a conjugated ⁷ system which usually consists of rotating single and double bonds in a ring ("bonding in benzene - the Kekulé structure", 2017). These molecules are unsaturated compounds that have special molecular stability due to the electron configuration that allows the electrons in the molecule's pi system around the ring to be delocalized.

The carbons nucleus is in line with the single bonds that are formed from an overlap of hybridized atomic sp^2 orbitals (**Diagram a, and b**). Double bonds consist of σ -bond and a π -bond. π -bonds are formed from an overlap of atomic p-orbitals (**Diagram c**) above and below the plane of the ring. The illustration below shows the simplest to the general outlook of the aromatic hydrocarbon of benzene, from 'a' to 'c'.

⁷ Conjugated- of an organic compound; containing two or more double bonds each separated from the other by a single bond



Diagram a, b and c. Structural formula of Benzene molecule (with orbitals)



Source: *Rules For Aromaticity — Master Organic Chemistry*. (2017). Retrieved from <http://www.masterorganicchemistry.com/2017/02/23/rules-for-aromaticity/>

Since the p-orbitals are out of the plane of the atoms, they can interact with each other freely, and become delocalized. This structure enables the electron not only to be a part of one atom of carbon but is shared between all the six carbons of the ring. Meaning, the number of electrons available will not be enough to allow double bonding between each carbon atom, but the available number of electrons strengthen all of the bonds equally on the ring. One can say that the molecular orbital is contemplated as to have π symmetry.

A double bond length between carbons is 1.34 Å and a single bond between the carbons is 1.54 Å but in benzene, all six carbon to carbon bonds have a length of 1.40 Å a middle strength between that of a single and double bond. This is what makes it perfectly hexagonal.

Table 1.1. Table of properties of Toluene.

Properties			
Chemical Formula	C_7H_8	Density	0.87 g/mL (20 °C)
Molar mass	$92.14 \text{ g}\cdot\text{mol}^{-1}$	Boiling point	111 °C (232 °F; 384 K)
Odor	sweet, pungent	Melting point	-95 °C (-139 °F; 178 K)

Table 1.1

Significance of Aromatic compounds

It has come to my attention that aromatic compounds play key roles in the biochemistry of all living things. The four aromatic amino acids (histidine, phenylalanine, tryptophan, and tyrosine) each serve as one of the 20 basic building blocks of proteins which help build and repair



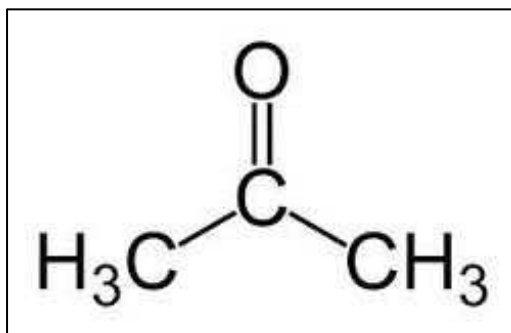
tissues in your body. Furthermore, all 5 aromatic nucleotides serve as monomers for forming DNA. Chlorophyll also has a similar aromatic system that is a light-absorbing pigment that helps carry out photosynthesis.

Aromatic compounds are industrially important and very well-known arenes like benzene, toluene and ortho-xylene. About 35 million tons of aromatic compounds are produced worldwide every year. Extraction of complex mixtures are attained through refining oil or by distillation of coal tar and are used to produce a range of important chemicals such as nylon, thinners etc.

1.2 Acetone

This is also known as propanone. It is a flammable organic compound and a colorless volatile liquid. Moreover, it is the simplest Ketone. Acetone (Figure 1.3) is a solvent that is quite miscible with water. It can be produced directly or indirectly from propylene. Around more than 80% of acetone is attained through a process called cumene.

Figure 1.3 Structural formula of Acetone



Source: Chemistry. (2017). Retrieved from <http://badacetone.weebly.com/uploads/2/6/8/3/26838762/1250641.jpg>

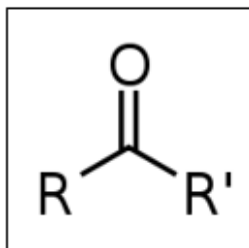
Ketone

Organic compounds with the structure where the R and R¹ can be a variety of carbon-containing substituents. They are considered 'simple' because they do not have reactive groups like –OH or –Cl attached directly to the carbon atom like in the carboxylic acids containing –COOH.



It is a widely known solvent for oil-based paint. It is an Aprotic polar solvent because it does not have any hydrogen atom joined to a nitrogen or an oxygen atom. This makes it unable to participate in hydrogen bonding. These solvents are not capable of acting as proton donors.

Figure 1.5. The structural formula of a simple ketone.



Source: (2017). *Upload.wikimedia.org*. Retrieved 10 September 2017, from <https://upload.wikimedia.org/wikipedia/commons/thumb/4/40/Ketone-group-2D-skeletal.svg/1200px-Ketone-group-2D-skeletal.svg.png>

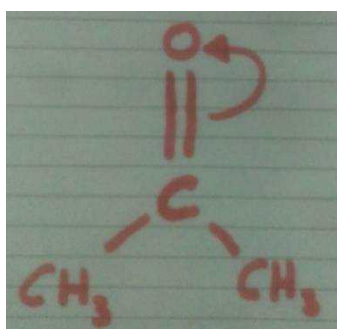
The polarity of this solvent occurs due to the electronegativity of the oxygen atom which causes a temporary dipole moment within the molecule. An increase in the electron domain of oxygen again induces another molecule of propanone to become polar.

A solvate is a compound that is formed from the combination of solvent molecules with molecules or ions of the solute. Aprotic solvents are good at solvating positive ions. Without hydrogen ions they are not very good at solvating negative ions.

S_N2 reactions are favored by aprotic, polar solvents. These reactions are called nucleophilic substitution reactions. It is called a bimolecular reaction because it occurs between two molecules in a particular step called the rate determining step. The rate-determining step governs the overall rate of reaction whilst the rest of the reactions have no effect on the rate, in the reaction mechanism.

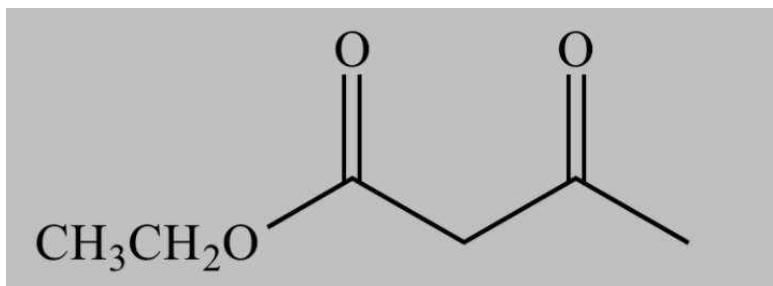
The double bond of the oxygen and the carbon will break making the Oxygen negative. The negative and electronegative nature of oxygen will make a polar attraction towards the esters in the paint. (**Figure 6**)

Figure 6: The breaking of pi bond of C=O double bond (represented by arrow)



The acetone is able to undergo nucleophilic substitution with the paint. The propanone and the ester within the paint combine to form a new compound called a β -ketoester. (**Figure 5**)

Figure 5: Structure of Ketoester



Illustrated Glossary of Organic Chemistry - Beta keto ester. (2017). Chem.ucla.edu. Retrieved 12 November 2017, from http://www.chem.ucla.edu/~harding/IGOC/B/beta_keto_ester.html

Many plastics and a few synthetic fibers have acetone as their solvent. It is used as a cleanser for cleaning or glistening tools after they've been a little out of shape or just dirty with random contaminants and dissolving the unsolidified glue. It is also used as one of the volatile compounds for a certain variety of paints.

Table 1.2. Table of properties of Acetone

Properties			
Chemical Formula	C ₆ H ₆ O	Density	0.78 g/mL (20 °C)
Molar mass	58.08 g·mol ⁻¹	Boiling point	56°C (132.8 °F; 329 K)
Odor	Fruit/nail polish remover		

Table 1.1

1.3 Tropical Climate Conditions

The equator is the area at which tropical climates occur. The sun shines more intensely and thus will be hotter due to direct heat waves from the sun. This is not the same as for countries that are closer to the north or South Pole because the heat is distributed in such a way that the heat is no longer intense to one specific area. There are three types of Climates. Tropical Equatorial, Tropical Monsoon and Tropical Wet and Dry Climate.



Tropical Equatorial Climate has the nature of having hot temperature throughout the entire year. There is a repetitive pattern of humid air that is hot with dry mornings and afternoon storms.

Tropical Dry and Wet Climates have a constant temperature around 21 to 27 degrees. Tropical Dry and Wet Climates have less than 60mm in a month and a rainfall less than 1000mm, yearly. They have dry and wet seasons that are derived from the Intertropical convergence zone. This is an area of low pressure and this is the point of trade wind convergence between hot and cold air.

Tropical Monsoon Climate are not very common. They have temperatures of above 18 degrees during the whole year and year and carry some features of wet and dry climates. However, they experience greater rainfall (more than 1000mm) in a single year. There is less variance of temperature throughout the months. Monsoon winds affect areas that have experienced tropical monsoon climates.

1.4 Paint, their failures and other properties

The major reasons for paint failure in fulfilling its purpose after application is the person who applied it or the unsuitable form of treatment of the surface through other exterior factors such as climate, whether etc. The defects and degradation of such exposure are:

Dilution- Might be over dilution or under dilution, including that of using an incorrect thinner. This is whereby the process of diluting the vehicle or the conjugated substance, from both the pigment and the binder, is not done according to the right concentrations that has been recommended by the manufacturer.

Contamination- Unforeseen contaminants added without the knowledge or permission of the manufacturer can cause various film failure and dangerous harmful gases through chemical reactions that might result in catastrophic deadly casualties.

Peeling/Blistering- Improper tending of the surface for coating.

Chalking- This is the whereby there is continuous forming of powder of the paint film on the painted surface. The UV radiation from light rays and condensation of water vapor on the surface overnight leads to the degeneration of the polymer system within the paint. Although, the magnitude of chalking alternates depending on the nature of the paint. E.g. epoxies would react at a faster rate compared to polyurethanes, which remain untouched for a long period of time.

Erosion- Very quick chalking (Faster than that with epoxies). Caused by external commodities like air and water etc. (more or less like what happens to the rusting of irons) or due to the generation of acid created by fungal species (happens more in humid areas) e.g. The 'Aureobasidium pullulans' is infamous for its effect on wall paint.



Cracking- Unequal expansion or contraction of paint coats is what causes paint films to crack. This recrudesces when the coats of the paint are not given enough time to be completely cured before applying the next.

Figure 2.1 and Figure 2.2. Cross-linking effect to structure of paint as it coalesces

Figure 2.1

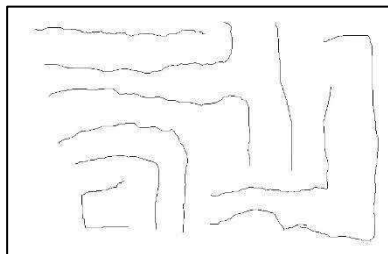
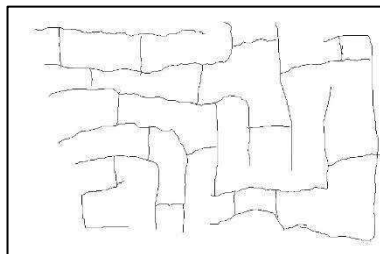


Figure 2.2



Recently there are policies that restrict the use of volatile organic compounds, due to harmful gases from industries that can negatively affect the environment. Other options have been formulated; UV curing paints allow successful formulation with low (or no) concentrations of diluents required. This is possible because the monomers and oligomers¹⁶ in the vehicle/binder have relatively low molecular weight, making viscosity become fluid enough to be applied to a surface without the help of a thinner.

2 Experiments and results

2.1 Hypothesis

I expect Acetone (Propane) to be a more efficient as a diluent towards the oil-based paint because of its aprotic nature. I do not believe that toluene will be more efficient than propane because of its strong and stable conjugated system that does not allow polarity in the molecule.

2.2 Apparatus

- | | |
|------------------|---------------------------|
| • Safety Goggles | • Acetone |
| • Safety mask/ | • oil-based paint (white) |
| • Lab coat | • Syringes |
| • Gloves | • Stirring rods |
| • Humidity meter | |
| • Paintbrushes | Glass Beakers |
| • Toluene | |

¹⁶ Oligomers - A intermediate compound between a monomer and a polymer



Safety:

- Make sure you are away from exposure to fire that can react with the highly volatile chemicals.
- Keep a fire extinguisher close.
- Keep long hair tied back and make sure that long or large necklaces are taken off and kept safely.
- Put on Safety goggles and gloves.

2.3 Method

1. Measure 15 ml of paint with a syringe and put it into 2 separate glass beakers.
2. Measure 20 ml of paint with a syringe and put it into 2 separate glass beakers.
3. Label each beaker depending on the paint volume.
4. Add 5 ml of toluene with a syringe, onto all the glass beakers.
5. Mix each well with a stirring rod.
6. Repeat step 5 – 8 with acetone as the thinner for the next batch.
7. Use a paintbrush to paint the toluene-thinned paint onto the bricks, each twice.
8. Do the same with a clean brush on the acetone-thinned paint onto another set of bricks, each twice.
9. Check and record the humidity and temperature of the atmosphere.
10. Observe and record the complexions of all the paint.
11. Clean up any spills on the ground or the surface where you have been working on.
12. Wash your hands carefully after you leave.
- 13.** Repeat step 1-4 and 14-16 every 12 hours, for 3 days.

2.4 ResultsObservation

Toluene seconds after painting on rough tiled floor	Acetone seconds after painting on rough tiled floor
Very quick to get the mixed with the paint.	Took a little more time and effort to get the chemical to combine with the paint.
Harder to apply. Seemed a little too weak to hold onto the surface. It seems like I have diluted the oil based paint with water. (which obviously isn't possible)	Easier to apply because, while painting, it can be seen to be fully coating the surface, in an efficiently thick enough complexion.
Has a sweet pungent smell being emitted into the air	Smell of nail polish remover being emitted into the air
The paint immediately become weaker with a few strokes while mixing the two components	After a while, the paint remained almost as thick as it once was but with more volume.



	Volume of Thinners	Volume of Paint (in cm ³)		Concentrations in paint (in cm ³)		Absolute certainty of volume of thinners	Percentage error
		A	B	A	B		
Toluene Acetone	5.0 cm ³	15.0cm ³	20.0cm ³	0.00033 moldm ⁻³	0.00025 moldm ⁻³	±0.1 moldm ⁻³	20%

Toluene after 24 hours	Acetone after 24 hours
Paler looking. The white color seems to be merging with the brown of the brick and forming a dull white-brown complexion.	It's a little more lustrous and is much more filled with white color.
A little bit rougher (to some degree)	Smoother, but dries slower
Smell doesn't linger as much	Smell still lingers

Toluene after 48 hours	Acetone after 48 hours
Very pale. Colour has is transparent enough to still see the colour of the medium it was applied on	It's a little more lustrous and is much more filled with white color.
Paint comes of when touched. Like dust on the top layer	Very smooth after completely dry
No more odor being emitted	No more smell emitting

Key	
A.C	Absolute certainty
P.E	Percentage error
Temp	Temperature
R.H	Relative Humidity

	Initial	A.C	P.E
Temp (in °C)	27	±1	4%
RH	78	±1	1%

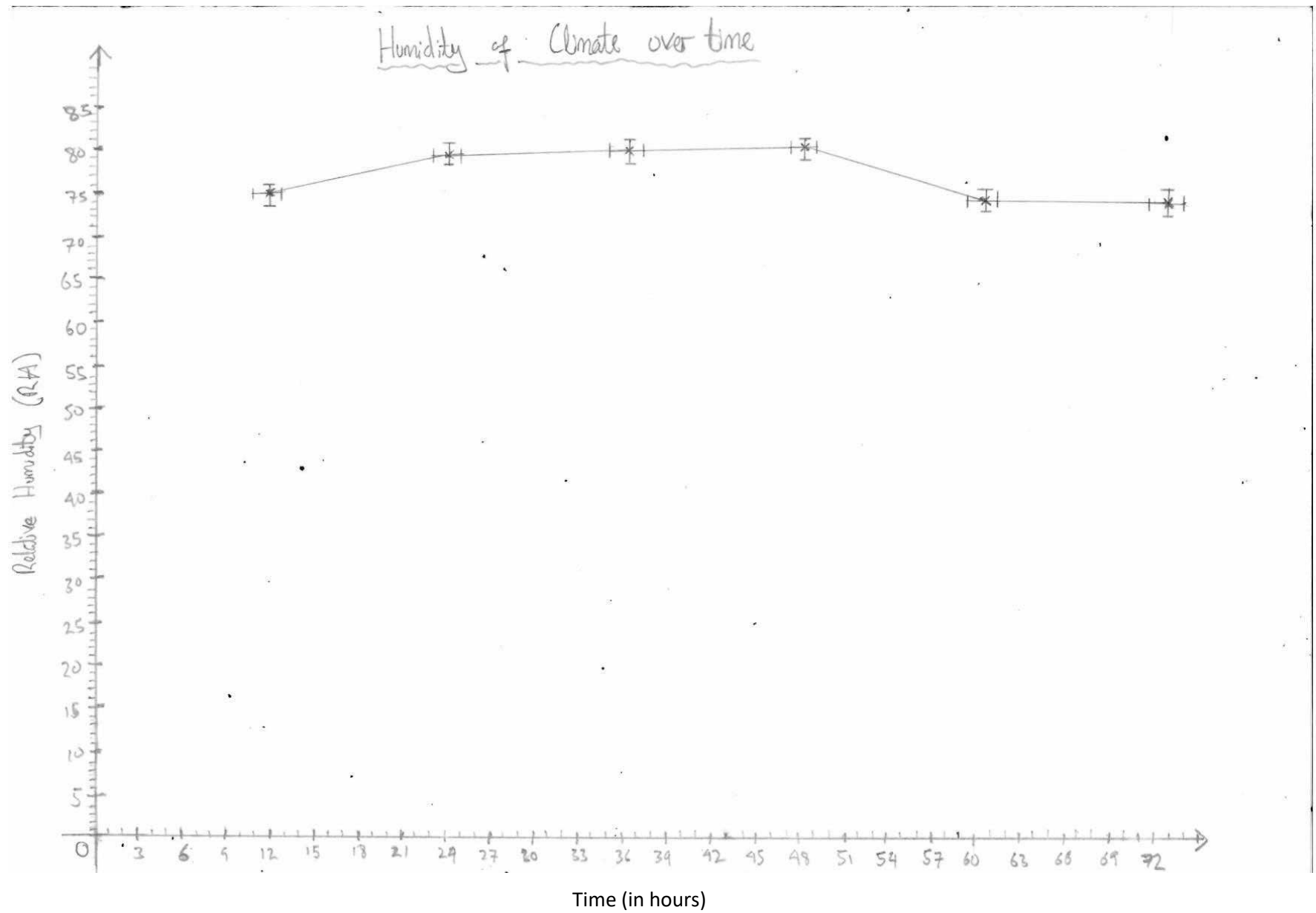
Day 1 of Coalescence						
	12 hours	A.C	P.E	24 hours	A.C	P.E
Temp (in °C)	24	±1	4%	26	±1	4%
RH	75	±1	1%	79	±1	1%

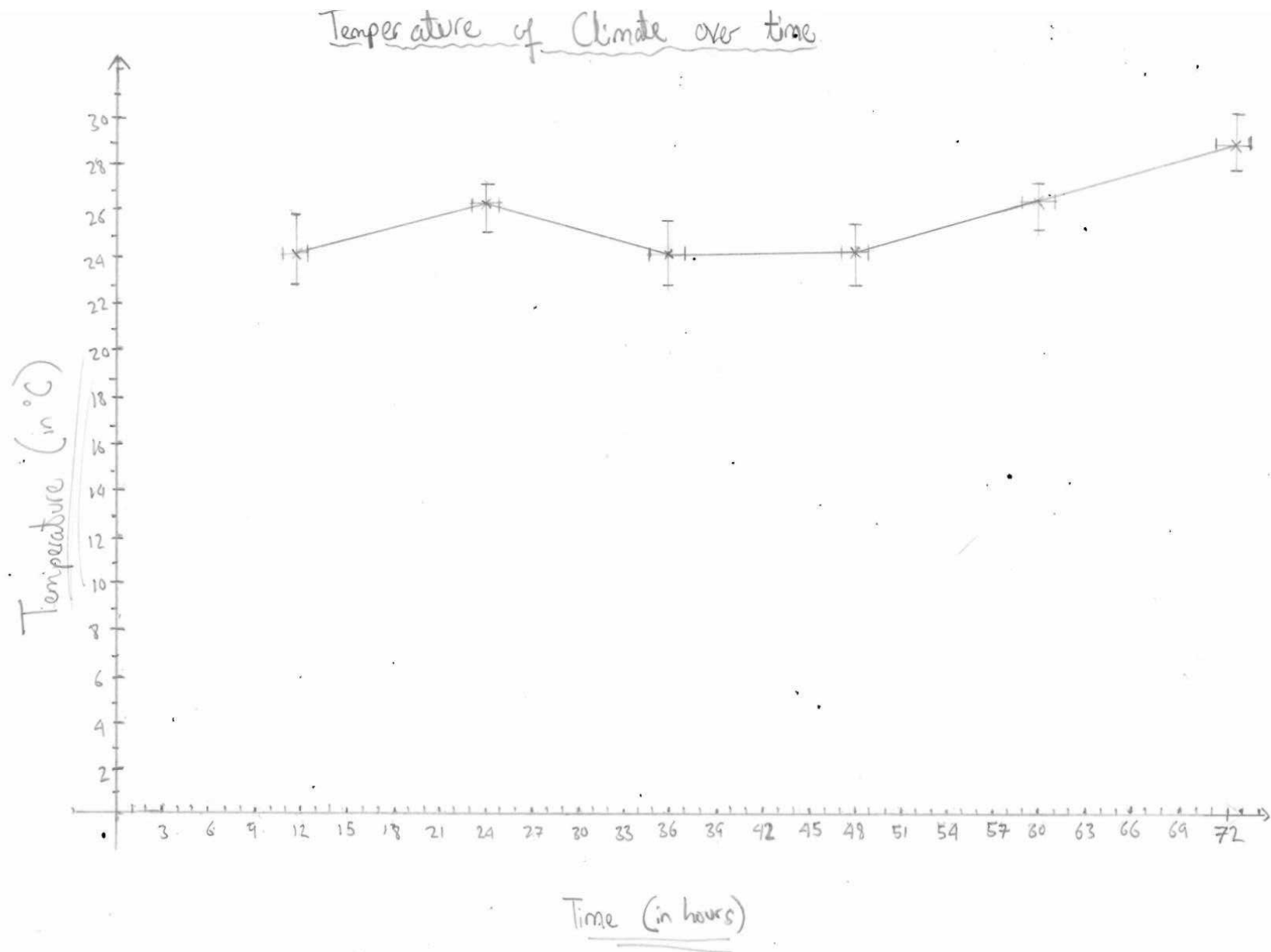


Day 2 of Coalescence						
	36 hours	A.C	P.E	48 hours	A.C	P.E
Temp (in °C)	24	<u>±1</u>	4%	24	<u>±1</u>	4%
RH	80	<u>±1</u>	1%	81	<u>±1</u>	1%

Day 3 of Coalescence						
	60 hours	A.C	P.E	72 hours	A.C	P.E
Temp (in °C)	26	<u>±1</u>	4%	29	<u>±1</u>	3%
RH	75	<u>±1</u>	1%	75	<u>±1</u>	1%







3 Conclusion

It can be clearly seen that the Acetone had an efficient cross-link with the gloss enamel white paint than the Toluene. In theory, this proves that the Toluene is truly aromatic due to its stability to not react with the oil-based paint. Its conjugated system of equally shared electrons refuses the compound to form links between adjacent chains with the polymer of the paint.

The Acetone, on the other hand, was not as stable because of its aprotic polar molecule which allowed there to be a stronger cross-linking effect between the propane and the ester structure to create ketoester. This means that in future, the Acetone-thinned paint shall last longer than the Toluene-thinned paint. The Toluene-thinned paint is more prone to different types of paint failures (especially chalking) depending on the tropical environments and its controlled variables.

Although, there were some limitations to the experiment that might not make the calculations as accurate. For the past few weeks, the climate in Gabon has been very wet, which brings us to another paint failure; dilution. The drizzling might have changed the pH and concentration of the compounds within the paint, therefore giving them a different complexion or chemical reaction. The surface which the paint was tested on might have contained unknown impurities that could not be washed of by water; contamination. The last significant limitation is the amount of concentration of the hydrocarbons. There may not have been enough variation of concentrations of the paints in order to see whether it is actually the nature of the compound or the amount put within the paint. From this we can establish a consensus that the aliphatic hydrocarbon, acetone, is a rational consideration as a diluent for oil-based paint, compared to Toluene.



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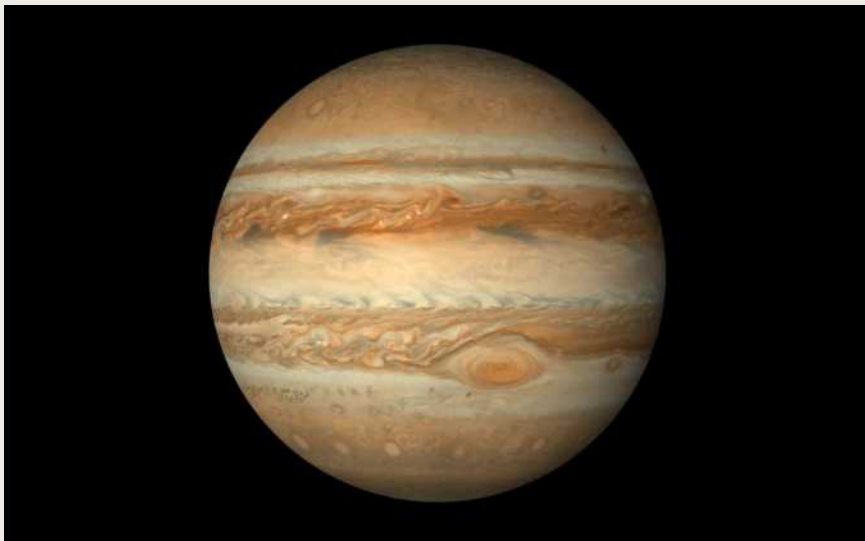
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MEASURING THE PERIODS OF JUPITER'S GALILEAN MOONS AND THEREBY MEASURING JUPITER'S RELATIVE MASS: A COMPARISON OF REAL AND VIRTUAL METHODS

PHYSICS



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Measuring the periods of Jupiter's Galilean moons and thereby measuring Jupiter's relative mass: A comparison of real and virtual methods.



Jupiter and the Galilean Moons (image from astronomyonline.org)

3,882 Words



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Bibliography



1 Introduction

1.1 Purpose

Since the advent of the telescope, the Galilean moons have been noted for their easily recognizable appearance and have provided amateur astronomers with a starting point to explore the rest of the sky. This essay explores the physics of the moons' orbits, replicating Galileo's famous discovery using amateur equipment, comparing this method to a more modern and virtual one and then calculating the relative mass of Jupiter.

1.2 Background

1.2.1 Galileo

Galileo Galilei (1564-1642) was an Italian astronomer credited with many revolutionary discoveries in astronomy, mathematics, and physics. His work has had a long-lasting impact on modern astronomy and many of his findings still hold true to this day. In particular, he helped disprove the geocentric view of the universe, in which all the planets and stars were thought to rotate around the Earth (Galileo Biography, n.d.).

Galileo was an early adopter of the telescope and used it to explore the night sky. One of his most important discoveries was of the four largest moons of Jupiter, which are now named after him. The discovery was made on January 7, 1610, through a telescope he had constructed (Hamilton, n.d.). Over several weeks he observed the movement of these bright objects, noting they seemed to stay within Jupiter's general vicinity. He theorized they were not stars but objects orbiting around Jupiter. One of the reasons for his conclusion was the simple harmonic motion (SHM) these objects were displaying.



Galileo's discovery was particularly revolutionary because it contradicted the Ptolemaic view that the Earth was the center of the solar system (Galileo's Discoveries, n.d.). The Catholic Church regarded anything contrary to the Ptolemaic view as heresy. On June 22nd 1633, Galileo was forced to recant his beliefs and lived the rest of his life under house arrest. Notwithstanding, his work remained very influential, including for Johannes Kepler, who later formulated complex laws of orbital motion (Kepler's Laws, n.d.). Kepler's 3rd law will be used later to calculate Jupiter's relative mass.

1.2.2 The Galilean moons

The four "Galilean moons" are Io, Europa, Ganymede and Callisto. From modern observation we know their orbital periods are 1.769, 3.55, 7.15 and 16.69 days respectively (The Galilean Satellites, n.d.). Io, closest to Jupiter, is the most geologically active object in the solar system, with over 400 active volcanoes. Europa, the second closest, is approximately the size of Earth's moon and covered in thick ice. Beneath its surface lies an ocean believed to be 200 km deep. Ganymede, the largest satellite in the solar system, has a 5,262 km diameter. Furthest from Jupiter – and therefore with the longest orbital period – is Callisto, a rocky object covered in craters.

1.3 Research question

The periodicity of an object's orbit can be determined by observing repeated changes in position over time. The Galilean moons of Jupiter are easily visible through a telescope. Their periods can thus be calculated using home equipment. From this we can then calculate the relative mass of Jupiter using the Earth-Moon system as a reference.

The research questions of this paper are, then, as follows:



-
- Can we replicate Galileo's experiment to estimate the periods of Jupiter's Galilean moons?
 - Can we simulate the same experiment using online Planetarium software?
 - And finally, using the results, can we make an estimate of Jupiter's relative mass to the Earth's?

2 First experiment – Galilean method

2.1 Explanation of experiment

This experiment was designed to calculate the orbital periods of the 4 Galilean moons using a modern equivalent of Galileo's method. A home telescope was hooked up to a DSLR camera and pictures of Jupiter and its moons were taken each night over a 14-day period.

2.2 Materials

- ETX 125 Telescope: 127 mm clear aperture, 1900 mm focal length
- Canon 60D DSLR camera: 5184 x 3456
- Kiwifotos remote switch for Canon EOS
- Meade instruments 07363 No.64 SLR camera adapter
- Celestron 93419 T-Ring for 35mm Canon EOS camera
- Dell Laptop
- Camera remote
- Notepad
- Night sky navigation application (SkyMap on Android)
- Adobe Photoshop CC
- Curve fitting software (online at mycurvefit.com)



2.3 Setup

The first step was to research the times at which Jupiter would be visible from my location (southern Idaho, USA, during a holiday there). It had to be ensured that Jupiter would be above the treeline at a certain time of night and that the sky had a reasonable chance of being clear on successive nights. Online websites such as skymaponline.net were used to know in which general direction the telescope should be pointed.

It was important that each picture be taken from the same location every night so as not to have skewed results. To achieve this, a spot was marked on the ground with duct tape.

In order to mount the Canon DSLR to the telescope, several custom parts had to be ordered.

2.4 Procedure

1. The coordinates of the telescope were determined to be 42.5558° N, 114.4701° W.
2. Using simple Android sky navigation software, an approximate location of Jupiter was determined. Using the telescope viewfinder, Jupiter was then visually located and the telescope manually aligned.
3. Once Jupiter was manually focused in the telescopic eyepiece, the telescope was switched to the DSLR viewfinder and the camera focus was adjusted.
4. Every night at precisely 10:00 P.M the camera remote was triggered and 3 images taken. Multiple images were to prepare for any spontaneous problem, such as blurring, haziness in the sky, or other disturbances.
5. The process was repeated over a 14-day period.



6. Once all images had been taken, the best was selected from each day and loaded in Adobe Photoshop.
7. For each photo, the Photoshop measurement tool was used to determine the apparent distance (in cm) from each moon to Jupiter.
8. These distances were loaded into a Google Sheets document.

2.5 Findings from the Observations

Below is a screenshot of the raw data as recorded on successive nights of observation:

	A	B	C	D	E	F	G	H	I
1	Date	Time	Weather Conditions	Photo ID		Io	Europa	Ganymede	Callisto
2	7/30	10:00	Clear						
3	7/31	10:06	Smoky/Hazy due to fire, faint visibility	6583	1	-0.76	0.17	1.66	Out of frame (lith)
4	8/1	10:00	Intermittent cloud cover, otherwise clear	6593	2	-2.26	-0.97	4.83	-8.43
5	8/2	10:00	Smoky/hazy	6597	3	1.92	1.45	4.04	-6.6
6	8/3				4				
7	8/4				5				
8	8/5				6				
9	8/6	10:00	Clear	6601	7	2.82	0.13	-2.59	5.7
10	8/7	10:00	Clear	6606	8 Hidden	Hidden		0.85	7.88
11	8/8	10:00	Clear	6610	9	-2.57	-0.46	4.42	9.01
12	8/9	10:00	Clear	6615	10	1.34	1.08	4.34	8.78
13	8/10	10:00	Clear	6622	11	1.62	-1.41	0.59	7.06
14	8/11	9:59	Cloudy/Smoky	6623	12	-2.11	1.38	-2.55	4.58
15	8/12	9:59	Clear	6627	13	-0.71	-1.31	-4.58	1.47
16	8/13	10:00	Clear	6631	14	2.79	0.72	-3.21	-1.04

And below is a sample image as captured by the DSLR through the telescope, clearly showing Jupiter and the 4 Galilean moons:





2.6 Calculating the orbital periods

Kepler first theorized that astronomical orbits are elliptical. Galileo didn't know this at the time of his observations and concluded that the bright objects moving around Jupiter followed circular paths. Luckily, the Galilean moons do follow nearly circular orbits. To calculate their orbital periods, we assume that they are circular.

An object moving in a circular orbit viewed side on in two dimensions appears to be performing Simple Harmonic Motion (SHM): motion back and forth through a point known as the equilibrium. Per the Encyclopedia Britannica, SHM is: *"repetitive movement back and forth through an equilibrium, or central, position, so that the maximum displacement on one side of this position is equal to the maximum displacement on the other side. The time interval of each complete vibration is the same, and the force responsible for the motion is always directed toward the equilibrium position and is directly proportional to the distance from it."* (Simple Harmonic Motion, n.d.).



From our perspective on Earth, the moons appear to move through Jupiter in slingshot-like motion, having the same maximum displacement on either side. At maximum displacement, the moon appears to halt and then returns in the other direction. To the observer, its maximum speed appears to occur as it is about to pass “through” Jupiter. Galileo’s insight from his observations (which corresponded to SHM) was that he was actually seeing these objects make a circular orbit around the planet (passing in front and then behind).

The relative distance (in cm) observed from the 14-days of observations are shown below. (Note: the author was able to make “educated guesses” about which point of light represented which moon because of prior knowledge. Galileo would not have had this information).

Relative distance from each Moon to Jupiter (in cm)

Date	Io	Europa	Ganymede	Callisto
7/31	-0.76	0.17	1.66	Out of frame
8/1	-2.26	-0.97	4.83	-8.43
8/2	1.92	1.45	4.04	-6.6
8/3	No observations possible			
8/4	No observations possible			
8/5	No observations possible			
8/6	2.82	0.13	-2.59	5.7
8/7	Hidden	Hidden	0.85	7.88
8/8	-2.57	-0.46	4.42	9.01
8/9	1.34	1.08	4.34	8.78
8/10	1.62	-1.41	0.59	7.06
8/11	-2.11	1.38	-2.55	4.58
8/12	-0.71	-1.31	-4.58	1.47
8/13	2.79	0.72	-3.21	-1.04

One of the constraints on the experiment was its length. 14 days was the amount of



time (in the holiday) remaining once it had been devised – not quite enough to capture the full period of Callisto.

The cells labelled “hidden” refer to the times where the moon was out of view and assumed to be occluded by (behind or in front of) Jupiter. On 31 July, Callisto was not captured within the photo – presumably because its maximum displacement was beyond the dimensions of the camera image. Smoke and haziness in the sky – Idaho was suffering significant wildfires – made it challenging to locate a specific moon or even Jupiter itself on some nights, leading to only 11 nights with data.

SHM is sinusoidal over time. Bearing this in mind, the method was to fit the observed data to a sine curve using least squares fitting. From these curves the approximate orbital period of each moon could then be determined.

To estimate the best curve fit, online software via mycurvefit.com was used and the general equation of a sine wave was entered:

$$y = A \left(\sin\left(\frac{2\pi x}{B}\right) - C \right)$$

where A = amplitude

B = period

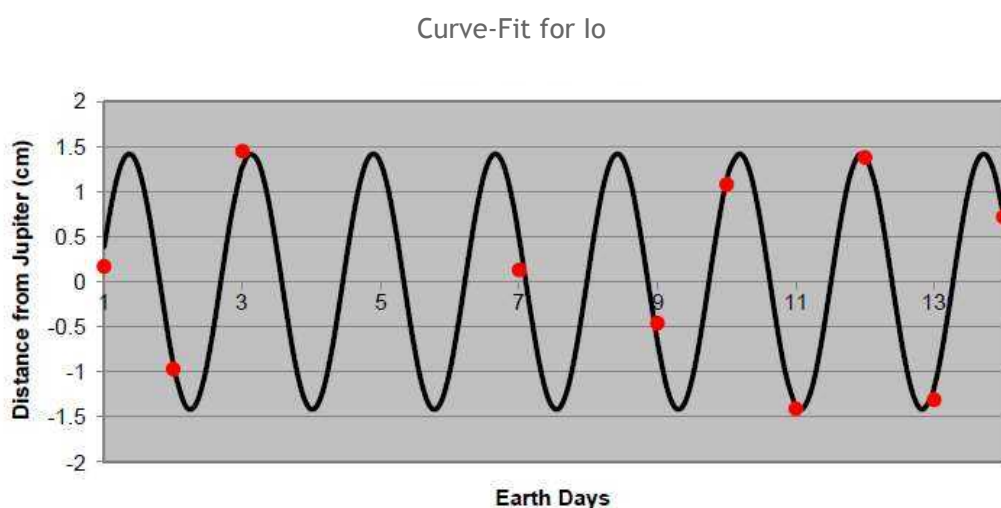
C = phase shift

To produce an estimate, the software asks the user to enter initial estimates for A, B, and C. These had to be repeatedly modified (by “guesstimate”) until as good a fit as possible could be obtained.



The goodness of fit was measured by an 'R-Squared' score, which represents a cumulative error. Also known as the "coefficient of determination", it is a measure of the "the proportion of the variance in the dependent variable that is predictable from the independent variable(s)." (Coefficient of Determination, Wikipedia). The closer to 1.0, the better the fit.

The software generated the following four graphs:



Estimates of 4, 2, and 4 for A, B and C parameters were entered respectively for Io. The software generated the above graph, with the red dots representing the experimental observations and the black curve representing the best sine curve fit.

The results (equation, coefficients and error measures) are summarised in the following table:

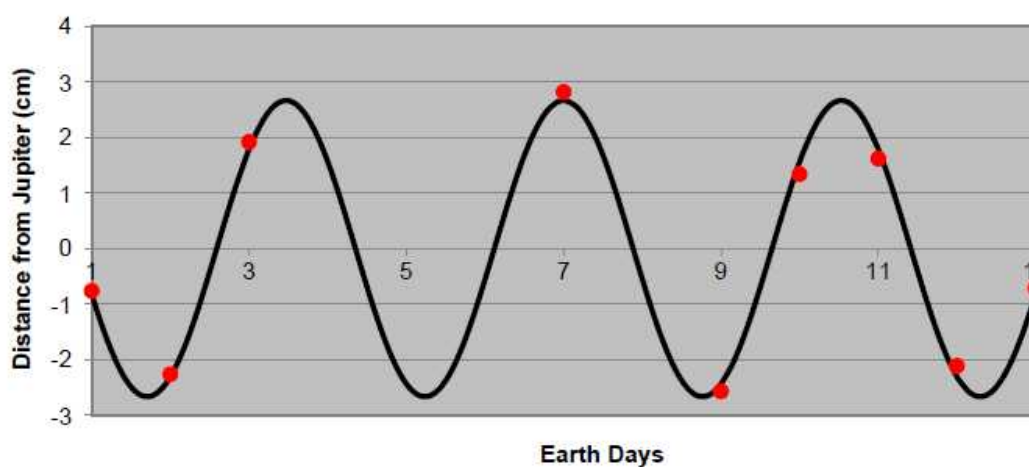
Best fit equation			Measure	Value
$y = 1.41955 \left(\sin \left(\frac{2\pi x}{1.76436} \right) - 3.2862 \right)$			R ²	0.974069
Coefficient	Value	± Error	aR ²	0.962956
A	1.41955	0.0970029	P	0.00000647079
B	1.76436	0.0073225	SE	0.197535



C	3.2862	0.127857	F	87.6495
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The resulting value for B (the orbital period) was **1.764 Earth Days**. The value of Io's orbit measured with high precision using modern equipment is 1.769 Earth Days. Our result was, thus, only .3% off the correct value, which is very close, and the R^2 was just 0.974.

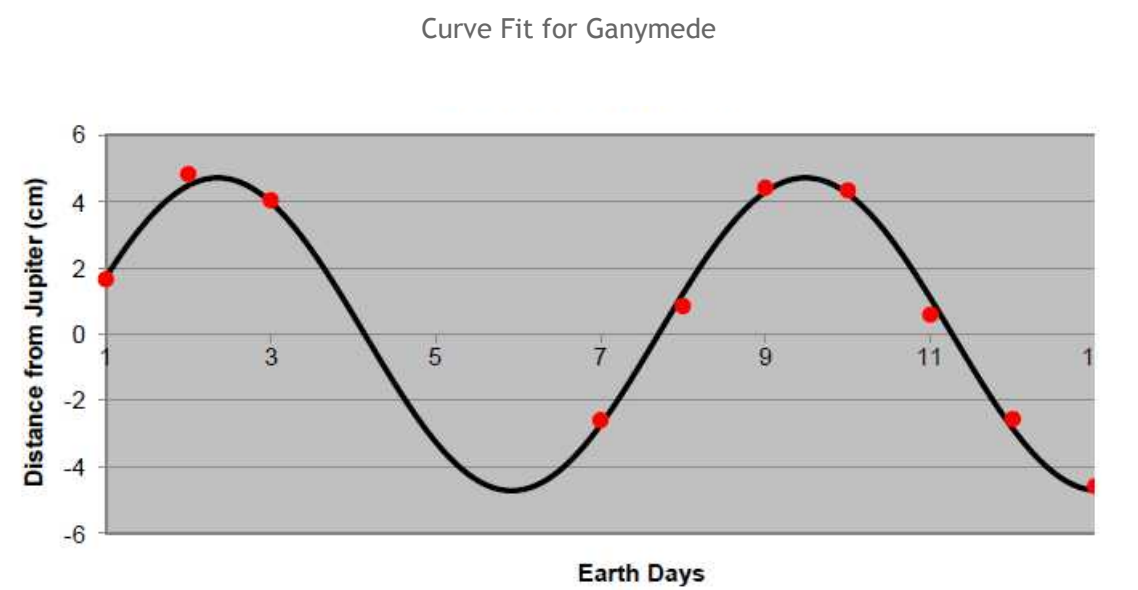
Curve Fit for Europa



Best fit equation			Measure	Value
$y = -2.66486 \left(\sin \left(\frac{2\pi x}{3.52993} \right) - 1.46662 \right)$			R^2	0.994671
Coefficient	Value	\pm Error	a R^2	0.992387
A	-2.66486	0.0736203	P	0.00000002566
B	3.52993	0.0130608	SE	0.175927
C	1.46662	0.0593033	F	435.535



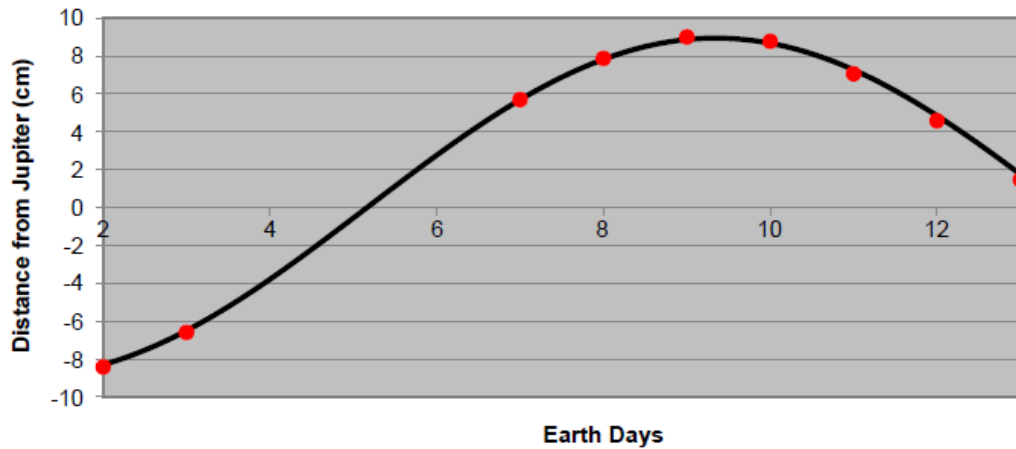
The results for Europa were also very accurate. The period was calculated to be **3.529 Earth Days**, which is very close to 3.551, the standard value. The R^2 was also very good, at 0.995.



Best fit equation			Measure	Value
$y = 4.71565 \left(\sin \left(\frac{2\pi x}{7.12662} \right) - 0.508141 \right)$			R^2	0.994389
Coefficient	Value	\pm Error	aR^2	0.992284
A	4.71565	0.123899	P	0.00000000243
B	7.12662	0.0521897	SE	0.291099
C	0.508141	0.0585565	F	472.557

For Ganymede, the curve fit gives a value of B (the orbital period) as **7.127 Earth Days** – again, extremely close to the real value of 7.155. The R^2 was 0.994.

Curve Fit for Callisto



Best fit equation			Measure	Value
$y = 8.94735 \left(\sin \left(\frac{2\pi x}{16.7191} \right) - 1.94117 \right)$			R ²	0.998455
Coefficient	Value	± Error	aR ²	0.997792
A	8.94735	0.124263	P	0.00000000033
B	16.7191	0.176507	SE	0.282233
C	1.94117	0.0444494	F	1507.62

16.72 Earth Days was the value produced for Callisto which is, again, very close to the 16.68 that is accepted as the standard, and the R² was .998, which is, again, very good.

In conclusion, the result of this experiment was a set of curves that produced quite accurate values compared to the accepted values of each moon's orbital period. The experiment showed that Galileo's simple observational techniques are reasonably easy to replicate with modern equipment.



3. Second experiment – Virtual method

3.1 Explanation

In this second experiment, the goal was to use “virtual planetarium” software to simulate the first experiment and compare the results. The goal was to imitate the conditions of the previous experiment as closely as possible. “Virtual planetarium” software provides an accurate computer simulation of the observable universe.

3.2 Materials

1. “Stellarium” planetarium software
2. Adobe Photoshop CC
3. Curve fitting software (mycurvefit.com)
4. Dell Laptop

3.3 Procedure

1. In Stellarium, the time and day were set to the same day that the first picture was taken, 31 August at 10:00pm.
2. The coordinates of Twin Falls, Idaho were also entered (where the series of pictures in the first experiment were taken).
3. A screenshot was taken of Jupiter for each subsequent day (at 10:00pm) that one was taken in the previous experiment.
4. Photoshop was used to measure the apparent displacement of each moon in each photo.
5. The only difference this time was that every night over the period of 15 days was able to be analyzed and there was no smoke or haziness to affect the result.



-
6. The same procedure as before was followed to generate sine curve fits and error tables for each of the four moons.

3.4 Results

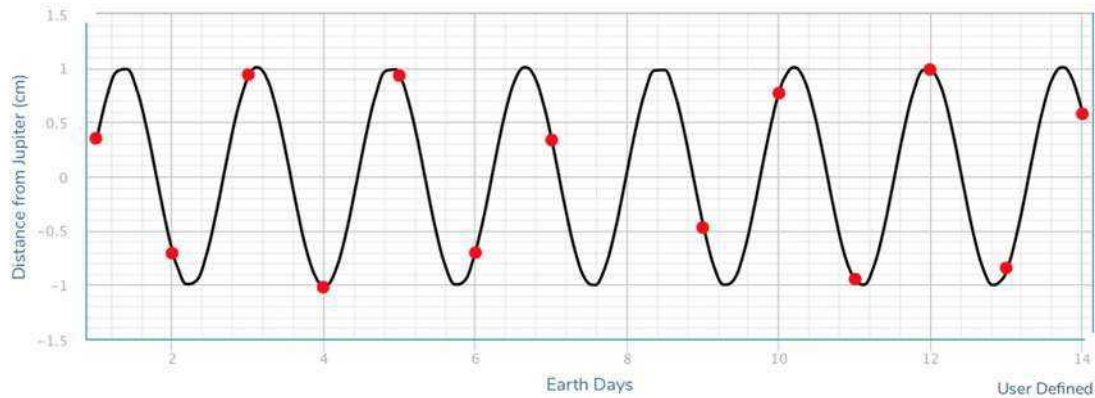
This table of data was generated from Stellarium and Photoshop for the four moons:

Relative distance from each Moon to Jupiter (in cm)

Date	Io	Europa	Ganymede	Callisto
7/31	0.352	-0.641	-1.053	-4.545
8/1	-0.709	-1.352	2.493	-4.215
8/2	0.939	1.138	2.129	-3.294
8/3	-1.022	0.911	0.292	-1.896
8/4	0.931	-1.482	-1.792	-0.33
8/5	-0.703	-0.323	-2.541	1.445
8/6	0.336	1.6	-1.47	2.897
8/7	hidden	hidden	0.69	3.955
8/8	-0.472	-1.45	2.32	4.438
8/9	0.769	0.891	2.261	4.319
8/10	-0.948	1.12	0.638	3.613
8/11	0.987	-1.325	-1.478	2.438
8/12	-0.844	-0.597	-2.49	0.934
8/13	0.578	1.534	-1.706	-0.75
8/14	0.352	-0.641	-1.053	-4.545



Curve Fit for Io

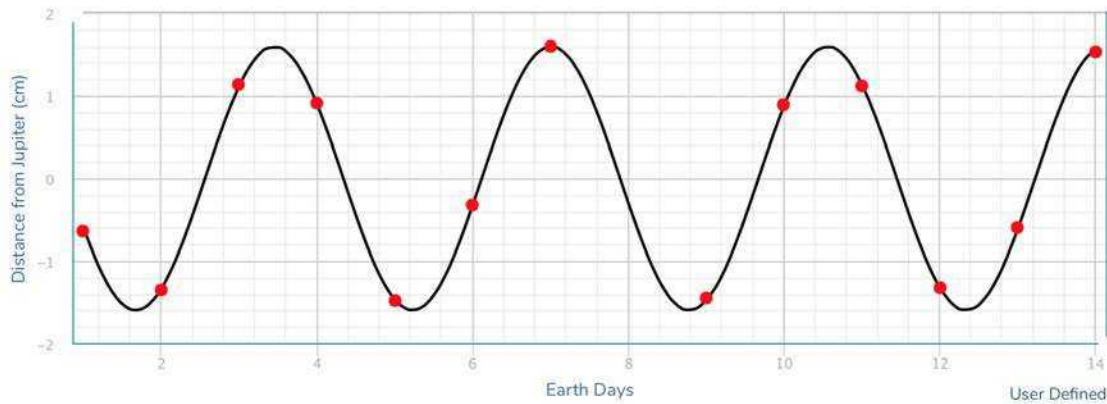


Best fit equation			Measure	Value
$y = 1.007446 \left(\sin \left(\frac{2\pi x}{1.769836} \right) - 3.196128 \right)$			R ²	0.9997
Coefficient	Value	± Error	aR ²	0.9996
A	1.007446	0.005626	P	0
B	1.769836	0.0007738	SE	0.01489
C	3.196128	0.01264	F	11660

The resulting value of B (the orbital period) generated was **1.769 Earth Days**. The period of Io's orbit measured with high precision using modern equipment is 1.769 Earth Days. So the method produced an exact result, with an R² of 0.9997.



Curve Fit for Europa

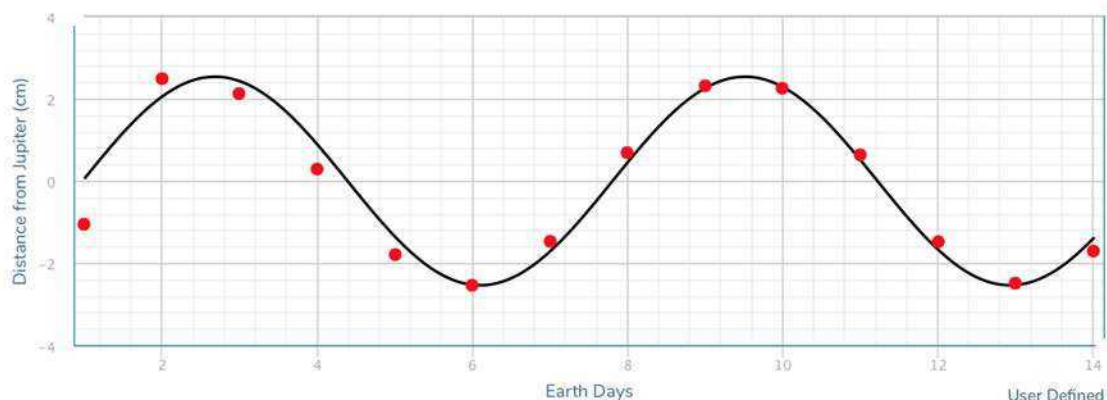


Best fit equation			Measure	Value
$y = 1.596277 \left(\sin \left(\frac{2\pi x}{3.555254} \right) - 4.515342 \right)$			R ²	0.9998
Coefficient	Value	± Error	aR ²	0.9997
A	1.596277	0.007787	P	0
B	3.555254	0.002484	SE	0.0206
C	4.515342	0.01	F	14020

The resulting value of B (the orbital period) generated was **3.555 Earth Days**. The period of Europa's orbit measured with high precision using modern equipment is 3.551 Earth Days. Again, the method produced an almost exact result, with an R² of 0.9998.



Curve Fit for Ganymede



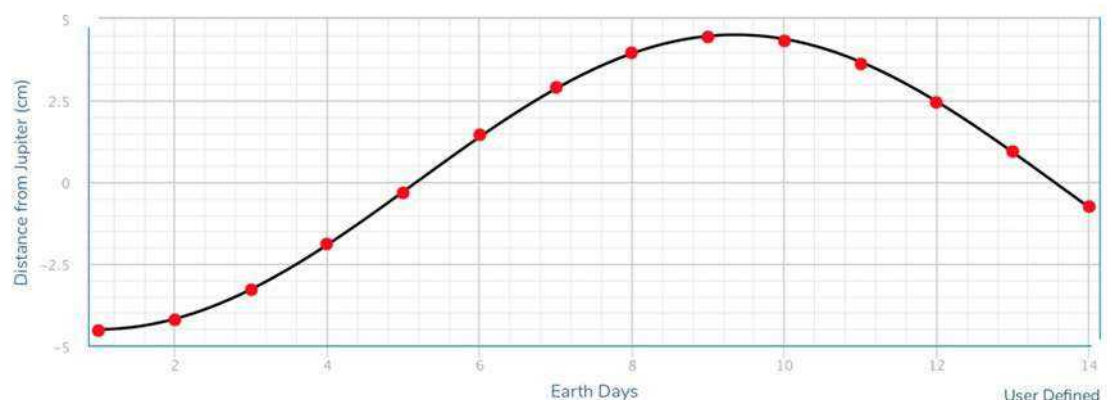
Best fit equation			Measure	Value
$y = 2.539838 \left(\sin \left(\frac{2\pi x}{6.832003} \right) - 0.8895961 \right)$			R ²	0.9494
Coefficient	Value	± Error	aR ²	0.9356
A	2.539838	0.1777	P	2.057*10 ⁻⁷
B	6.832003	0.1222	SE	0.4611
C	0.8895961	0.1363	F	68.82

The resulting value of B (the orbital period) generated was **6.832 Earth Days**. Europa's period measured with high precision using modern equipment is 7.155 Earth Days. So, interestingly, for Ganymede, our virtual method produced a result that varied from the known period by about 5%, with an R² of 0.9494 (the looseness of the fit can also be seen from the graph itself).

Though this is still a good result, it is less good than the others. Possible reasons will be discussed below in the section comparing the two experimental methods.



Curve Fit for Callisto



Best fit equation			Measure	Value
$y = 4.506788 \left(\sin \left(\frac{2\pi x}{16.74486} \right) - 1.937489 \right)$			R ²	0.9998
Coefficient	Value	± Error	aR ²	0.9998
A	4.506788	0.01659	P	0
B	16.74486	0.03926	SE	0.04251
C	1.937489	0.008224	F	24360

The resulting value of B (the orbital period) was **16.745 Earth Days**. Europa's period measured with high precision using modern equipment is 16.68 Earth Days. Again, the method produced a fairly exact result, with an R² of 0.9998.

4. Comparison of the Two Experiments

Overall, both experiments produced relatively accurate results.

In the first experiment, there were a number of possible sources of error. First, as noted, the orbits of the moons are not precisely circular, contrary to our assumption.



Secondly, the telescope's placement and alignment might not have been exactly the same on each night. However, given the scale of the distance from Earth to Jupiter, this is unlikely to have contributed much.

Third, the least square method is never going to generate a perfect fit for a graph from only 10 values. Repeating observations over a longer period would have further improved accuracy.

Fourth, there was considerable sensitivity in the sine curve fitting. Small changes in the 'seed' parameters given to mycurvefit.com produced large changes in outcomes.

However, the fifth and biggest source of error was likely the difficulty of making accurate measurements of the relative distance using Photoshop. The distance needed to be measured between the centres of the dots representing Jupiter and the moons: their effective centres of gravity. But with blurry telescope images, this was challenging. And counter to intuition, it was actually harder with the Stellarium images. Why? Because in the real world images, both Jupiter and its moons appeared as very small points. In Stellarium, Jupiter was represented graphically as a quite large circle, making accurate determination of the centre harder. The two contrasting images below illustrate the point:



Sample image from Experiment 1
(telescope image)



Sample image from Experiment 2
(Stellarium image)



However, even this uncertainty introduced relatively little error into either experiment.

In conclusion, the experiments were likely both very accurate because a single object moving with SHM displays absolute regularity and so, in principle, measurement of the period should be experimentally quite straightforward.

5 Calculating Jupiter's Mass from Each Set of Results

The more massive the planet, the faster its moons orbit around it (and the shorter their period). Jupiter's Galilean moons have very short orbital periods, so Jupiter's mass must be quite large compared with Earth's. We can use our measurements to make an estimate of Jupiter's relative mass compared to our own (McClure, 2014).

An important assumption is that the Earth comprises most if not all of the mass in its system (which is almost true, at about 98.78%) and that Jupiter contains nearly all the mass of its own system.

Io's average distance from Jupiter is **422,000 km**. Our lunar distance (from our moon to the Earth) is **384,400 km**. This means that Io's distance is

$$422,000/384,400 \approx 1.097 \text{ lunar distances}$$

The orbital period of Io was determined from our first experiment to be **1.764 days**.

Earth's moon's period is **27.322 days** (approximately 1 Earth Month)

$$1.764/27.322 \approx 0.06456$$

Therefore the **orbital period of Io is 0.0646 lunar periods**.



Kepler's Third Law states that the square of the period of a planet is proportional to the cube of its mean distance from the sun. The same applies to the satellites orbiting a planet.

A simple equation can then be devised relating the semi-major axis of the orbit to the period of the moon:

$$\text{relative mass} = (\text{semi-major axis})^3 / (\text{orbital period})^2$$

Plugging in the values from above:

$$(1.097)^3 / (0.0646)^2 \approx 316.34$$

Therefore, **Jupiter's mass is 316 times the mass of the Earth**. The value using modern measurement is **318 earth-masses**. But our result is very close, suggesting our experiment was a success.

The same calculations can be repeated using the data we measured for Ganymede.

Earlier, Ganymede's orbital period was found to be **7.127**. $7.127 / 27.322 \approx 0.261$ **lunar orbits**. The mean distance from Jupiter for Ganymede is **1,070,000 km**.

$$1,070,000 / 384,400 \approx 2.783 \text{ lunar distances.}$$

$$\text{relative mass} = (\text{semi-major axis})^3 / (\text{orbital period})^2$$

$$(2.783)^3 / (0.261)^2 \approx 316.42 \text{ earth-masses.}$$

This is, in fact, even a little closer to the real value of Jupiter's mass relative to Earth's.

Conclusions

In the first experiment, it was demonstrated that accurate data could be produced from simple observation of the night sky. Amateur equipment was used, in an effort to mimic



Galileo's approach as much as possible. This experiment proved successful with all four graphs providing quite accurate results.

The second experiment used software simulation to mimic the results of the first experiment. It was also successful in producing accurate results. However it was interesting that the results were slightly less accurate than for the real world experiment. This may have been due to greater inaccuracy in the measurements taken from the screenshots.

The calculations of relative mass made as a results of these experiments were also quite accurate. The closest value was 314 earth-masses, which is just 4 short of the standard value for Jupiter's relative mass.

The aim of this paper was to compare these two methods and to show that Galileo's method involving observation and calculations of SHM still holds strong to this day. His achievement, using simple tools and relying on insight, remains remarkable.



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CORPORATE CULTURE AT ORACLE

**BUSINESS
MANAGEMENT**



BACK TO CONTENTS PAGE

Extended Essay in Business Management

The Corporate Culture of

ORACLE® (Lestingi)

Title: Corporate Culture at Oracle.

Research question: “To what extent can Oracle’s success be contributed to its Corporate Culture and Organizational Structure?”

Word Count: 3734



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Introduction

Oracle is a multinational computer technology corporation that is world renowned for its databases for storing and retrieving information. It was established in the summer of 1977. Presently, Oracle is recognized as a market leader in its cloud engineering system database. (Oracle) The aim of this extended essay is to answer the question, ***“To what extent can Oracle’s success be contributed to its Corporate Culture and Organizational Structure?”*** The corporation has gone from a company in which no foreign investors would invest to become the market leader, and the second largest software revenue maker. (pwc) This essay will focus on Oracle’s human resources topic of the Business Management course syllabus. During my early research it was quickly apparent that Oracle’s organizational structure and corporate culture became a predominate factor in its unparalleled accomplishments.

The core of the company’s management style comes from its joint Chief Executive Officers (CEO) Mark Hurd and Safra Catz, and especially from its past CEO, Larry Ellison, who was an original Oracle co-founder. Ellison relinquished his Oracle CEO role in 2014, but he still serves as Chairman of the Board and Chief Technology Officer. Ellison still remains Oracle’s largest shareholder holding 25% of the company that is worth \$1.1 billion in shares. (Rushe) He is ranked number 4 in the 100 Richest Technology Billionaires in the World 2017 with a net worth of \$59.3 billion. (Forbes) Oracle was the major sponsor of Team USA, which was the Defender of the 2017 America’s Cup, which boasts as the world’s oldest international sporting trophy. As the America’s Cup Defender, Team Oracle USA, had the right to stage the event in any location, and decided on hosting this Cup in Bermuda, which is my home. (BOAT international)



This is a picture of Team Oracle USA foiling in Bermuda’s waters. (Fierman)

It is essential to properly address the research premise in order to create a clear depiction of Oracle’s corporate culture, the in-depth description of its organizational structure and to analyze its leadership styles. Charles Kettering, the noted inventor and head of research for General Motors once said, “a problem well-stated is half solved”.



Methodology

The data used to examine the reason for Oracle's success through corporate culture and organizational structure is from secondary sources. I utilized many sources from various websites, case studies reports, articles and books. Furthermore, I used reliable personal blog posts in order to obtain a direct perspective or past viewpoint from within the corporation itself. The primary data of two photographs I personally took of Oracle's business premises in California and in Toronto, Canada. By using a wide range of sources an objective viewpoint in understanding Oracle is necessary in order to answer the research question. Is Oracle's success based on its corporate culture and the effectiveness of its structure? One needs to know and understand all other factors that may also influence Oracle's success.

Each source will give an inclusive impression in order to understand the Oracle business model, which will then be inserted into a relevant Business Management context. An analysis of Oracle's accomplishment will then be compared to another multinational technology company such as Google. Evaluating Google can deduce Oracle's importance and effectiveness by evaluating both.

Theory Used

This essay utilizes the majority of the theory that comes from Unit 2 of the Business Management syllabus: human resources. Firstly, I will examine Oracle's organizational structure and prove it has a centralized structure. This will link with Oracle's leadership style of the present and its previous autocratic management style of its co-founder, Larry Ellison. Oracle's structure will then be applied to Mintzberg's framework to understand Oracle's most significant elements, which is essentially its corporate culture. I will utilize Charles Handy's theory to ascertain its corporate culture. This will establish the importance of the numerous components of Oracle, and thus forming the foundations and background of Oracle's corporate culture. Then lastly, I will compare Oracle to Google's culture and organization and analyze using Maslow's hierarchy of needs, in order to get a definitive answer to the research question.



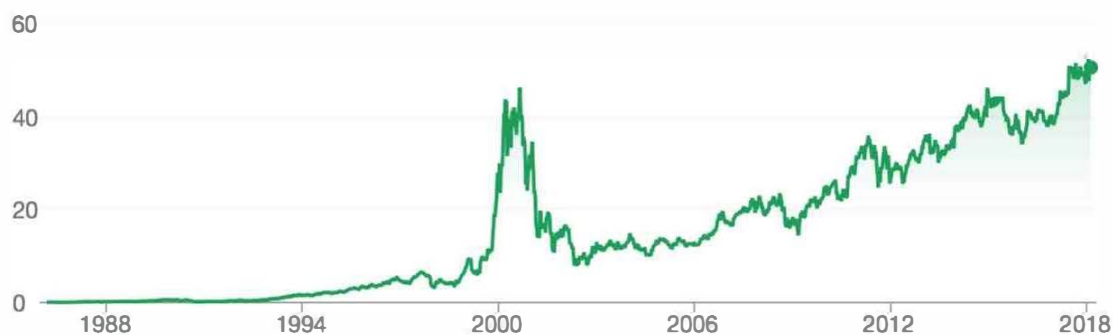
The Culture and Organization of Oracle

Background

Oracle is a 40-year-old multinational computer technology corporation, which provides cutting edge technology capabilities in database software and infrastructure technology. Oracle specializes in cloud-engineered systems and it offers other arrays of different services and products like mega hard drives. (Lestingi) Oracle was founded in 1977 under the name Software Development Laboratories (SDL) with only four employees. The co-founders, Larry Ellison, Bob Miner and Ed Oates, invested a mere \$2,000 of their own money and they received no outside funding. This was reasonable since software is not a capital-intensive business, but rather more skill based. Larry Ellison stated in an interview, “We were profitable from the days we opened our doors.” From the outset Oracle made money, except only lost money in one quarter in the beginning Ellison stated. (Ellison) As software engineers they saw potential and truly implemented first movers advantage as in 1977 there was no other similar company.

Over the decades, Oracle Corporation’s share price has gradually increased; this is seen in the share prices on the graph below. Shares started out at \$0 and now ranging around \$50 a share. (Yahoo! Fianance) Presently, Oracle is the second largest software revenue maker (pwc) and arguably one of the most successful software companies in the world.

Fig.1 Oracle’s share price



Oracle Corporation’s (NYSE:ORCL) share price in US dollars over the years, from 1977. Source: Yahoo! Finance¹

¹ Yahoo! Fianance. Oracle Corporation (ORCL). NYSE:ORCL. 15 January 2018.



Organizational structure

The first aspect to be examined is Oracle's organizational structure², which is significant to answer the research question of Oracle's corporate culture³. An organizational structure is essential to have as it provides guidance to the roles and clarity to the responsibilities such as managerial authority to a business.

Oracle has recognized the true importance of having a clear organizational structure. Oracle has even designed an online tool that helps any business create a hierarchy diagram called 'Oracle Fusion HCM Cloud Applications.' (Oracle Fusion) Further this is demonstrated in a quote that was released in a series of articles by Oracle⁴:

"A poor organization structure makes good performance impossible, no matter how good the individual managers may be." - Peter Drucker, *The Practice of Management at Oracle*

The quote highlights that if the organizational structure is poor, despite all other facets of the corporation being excellent, good performance is unreachable. The quote states that everything relies on establishing a good organizational structure, which the success of the business is dependent. In my research, I found an organizational chart of Oracle⁵ that highlights Oracle's centralization structure. (The Official Board) As the hierarchy reflects that the decision-making process is handled strictly at the very top clearly indicates its centralization. This Oracle chart has a tall organizational structure even though there are many levels of the hierarchy. There is a narrow span of control therefore individuals positioned at the higher level of the hierarchy will have significantly more control.

<https://finance.yahoo.com/quote/orcl/>.

² An organizational structure is the roles and responsibilities of a business, also reporting lines between individuals in the business. (Oxford University Press)

³ Corporate culture is the attitudes, experiences, beliefs and values of an organization are the elements that make up corporate culture. (Oxford University Press)

⁴ Wissink, Travis. *Enterprise Architecture, Organizational Structure, and Company Performance*. February 2012
<http://www.oracle.com/technetwork/articles/entarch/oeea-org-performance-1518919.html>.

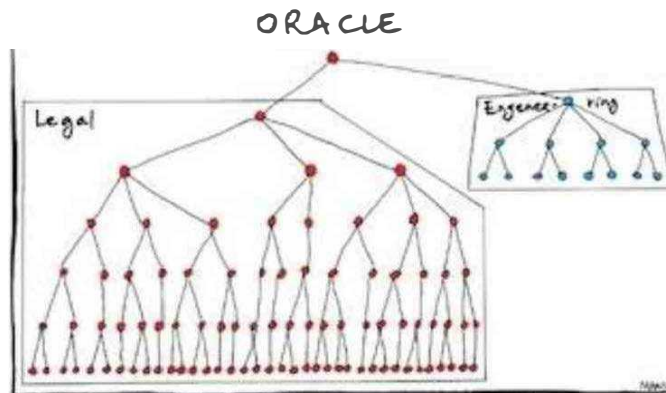
⁵ The Official Board. *Oracle*. 27 September 2017.

<https://www.theofficialboard.com/org-chart/oracle>.



By applying Charles Handy's theory it is evident that Oracle has a power culture. The organizational control culture is concentrated in a certain few individuals. Larry Ellison was one of those individuals. To reinforce this I found a different organizational structure for Oracle:

Fig.2 Oracle's organizational structure



This sketch is a humorous approach to Oracle's organizational structure (Cornet)

Figure 2 demonstrates that Oracle has changed from being a database empire to a buying empire. This sketch highlights the need for such a large legal team as Oracle has been buying technology company after technology company continuously. Multinational companies are put under scrutiny where flaws are bound to come up. On the organizational sketch there is only one higher dot representing an individual above "legal" and "engineering" representing the very top-level echelon of the Oracle hierarchy which makes the all-important decisions. This clearly demonstrates that Oracle's organizational structure is organized by hierarchy. Delegation rarely takes place in a centralization organizational structure so leadership is likely to be autocratic.



Corporate Culture

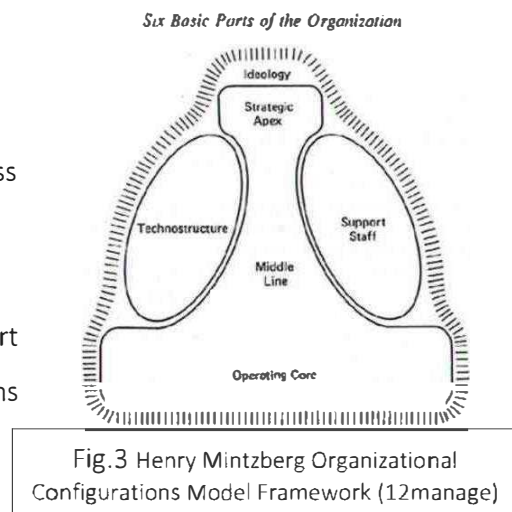
Corporate culture is immensely important and that culture certainly incorporates many facets. When an organization has an energetic positive corporate culture this truly empowers its employees. However, on the other hand a corporate culture, which is toxic with corporate culture clashes, will ordinarily diminish long-term productivity. A business's culture does not change immediately as change takes place when behaviors change.

This seems to hold true as the centralized structure of Oracle's core values and culture that is exhibited by Oracle's management and team was indelibly shaped and defined by Larry Ellison, who had an autocratic business leadership style as he held most of the decision making and power as much as possible thereby controlling every aspect of the Oracle organization.

An application of Mintzberg's framework of organizational structures can be applied to Oracle's structure. This framework analyzes an organization into six basic divisions:

(12manage)

1. Key decision makers are at the **strategic apex**
2. **Middle line** or middle management
3. **Operating core** is also known as operational process
4. **Technostructure** is made of the systems and infrastructures of technology
5. **Support staff** known as supplementary staff support
6. Finally **ideology**, makes up of the five other divisions refers to the culture of the organization



An application of the model above to Oracle shows that the strategic apex is decision-maker and that the leadership is centralized. That classifies Oracle as an entrepreneurial organization by Mintzberg's theory. The ideology of Oracle portrays highly motivated employees.



According to Mintzberg, entrepreneurial organizations characterized into having a centralized structure. This certainly applies to Oracle. This supports the organizational chart for Oracle drawn by Cornet. In an article, it states: "Larry Ellison ran Oracle as a feudal monarchy, and it won't be the same if he's no longer king." (Paul) Oracle's culture is described as having an organization that is a "feudal monarchy" having all the sway and power originates from the King: Larry Ellison. Oracle is a highly centralized company as there is only one key decision maker. However, since Larry Ellison stepped down in 2014 there is a co-CEO arrangement as Mark Hurd and Safra Catz are both CEO. (Rushe)



Leadership Style

The history of co-CEO ordinarily do not tend to be successful especially in an autocratic leadership style, however previously Hurd and Catz worked well together as co-Presidents under Larry Ellison. (Sullivan) Having two CEOs can be beneficial, as each person brings their own particular skill set and can divide up the work load. I found it surprising that Safra Catz is a woman. Catz is now one of the most influential and best-paid females in Silicon Valley. As well as being a co-CEO, she has remained the Chief Financial Officer, oversees legal and manufacturing operations. (Rushe) Having a woman as one of the CEOs is unusual, as only 4.6 percent of Fortune 500 CEOs are women. (Ilgaz) As having a leadership role is male dominated, at Oracle Catz has broken through the glass ceiling. Which many of her employees can find inspiration in.

Even long after Ellison had stepped away from the Oracle hierarchy his corporate business persona has shaped Oracle's future corporate philosophy. Oracle's fixed corporate compass is communicated in its official vision statement, which creates a clear goal for its employees. This overlying goal to all its employees will motivate them through its vision statement:

"Simplify: Speed information delivery with integrated systems and a single database.

Standardize: Reduce cost and maintenance cycles with open, easily available components.

Automate: Improve operational efficiency with technology and best practices." (Alchin)

Oracle's business ethos adopted important methods of communication with its customers and its ways of introducing meetings are aligned with the company's strategy, as it is a customer-based company. For external stakeholders, a tool like a vision statement binds and informs the customer to the corporation's overall ethos to ensure that the customer and business share the same objectives. For instance, an Oracle customer will certainly focus on the words like 'speed', 'reduce cost', 'easily available' and 'improve operational efficiency' which are essential components that customers are seeking, and so giving a sense of shared beliefs.



Oracle is a business that helps other businesses, as it has published articles on motivating its own employees in order to aid its clients. For instance, Oracle published the article '5 Ways to Boost Motivation in the Office'⁶. It is implied that Oracle will motivate its staff by taking advice from its own article. There is no official information that Oracle offers financial rewards to its employees when managers rate their own employees highly, however it is implied as Oracle is the second largest software revenue maker. (pwc) Oracle does use other non-financial techniques such as teamwork, and working collaboratively in a group in order to solve a problem. This can spark innovation and high performance in having more highly skilled individuals write software programs. However, failure can amplify tensions within relationships and so decrease employees' productivity and innovation. For example, having chic modern working facilities do make a positive working environment, which I experienced firsthand as I randomly came across two of Oracle's business premises in California and in Canada⁷. It is essential that its employees are emotionally content with their jobs and this will certainly entail their work environment in order to tap into the maximum potential of each employee.

⁶ Clair, Andreea. *5 Ways to Boost Motivation in the Office*. 8 August 2016.

<https://blogs.oracle.com/jobsatoracle/5-ways-to-boost-motivation-in-the-office>.

⁷ Appendix A, on page 20

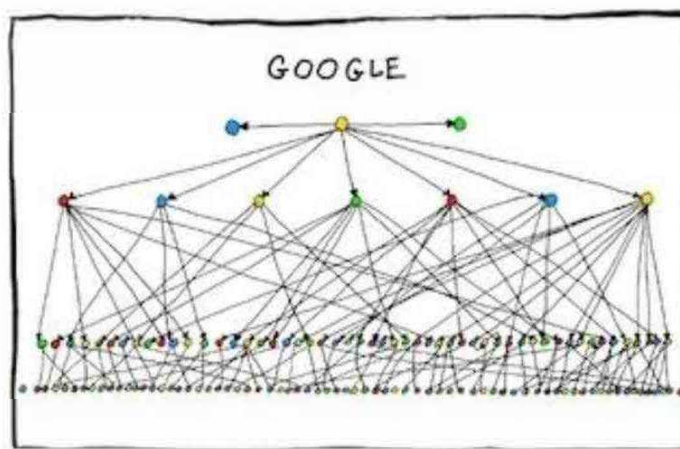


Comparing to a competitor

When it comes to the management of business, the idea of there is no one best way of running a business however similar the businesses will best be suited by the different management styles. Google's unique corporate culture is credited for its unprecedented success. Google is the number 1 Best Companies to Work For by Fortune. (Fortune) Google's corporate culture is the day-to-day living and the values which daily we as individuals strive to obtain. Google's corporate philosophy is that its employees more than any other physical asset or business plan is the backbone of a strong company. Google by adopting a thoughtful company's ethos has reached beyond its potential, and it has simply itself overachieved. Google's corporate culture is world renown as reflected in the film 'The Internship' released in 2013 about two mid-forties salesmen who find themselves in an internship at Google, and they must find methods to keep up with the younger tech savvy interns. (imdb) The film highlights the perks for working at Google such as free modes of trendy transportation, gourmet food and recreation to aid innovation in an ultra-modern work environment.

Google's organizational structure is decentralization, which is completely the opposite from Oracle; this is conveyed by figure 4. Google has a flat organizational structure by having fewer levels of hierarchy and having a wider span of control, and so this shortens the chain of command. This decentralizes decision making therefore delegation is more likely to happen. Google's business organization model the leadership is democratic.

Fig.4 An alternative organizational structure for Google



This is a humorous approach to Google's organizational structure (Cornet)

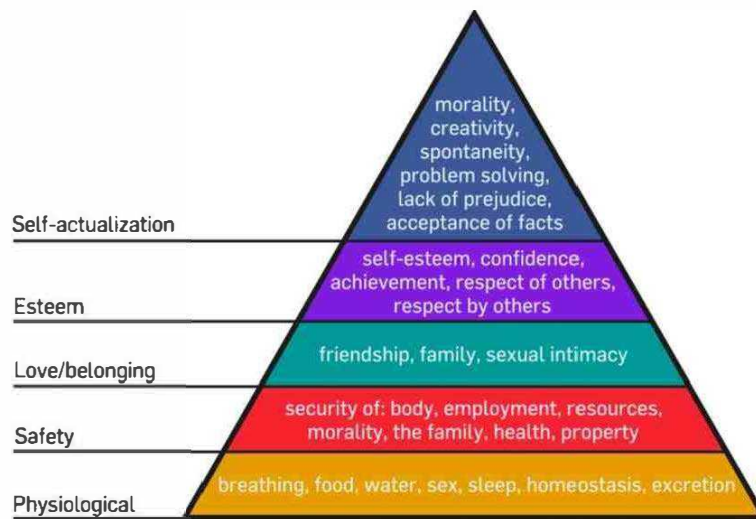


This sketch demonstrates that at Google there is no clear centralized direction and it encourages numerous projects. Google's engineers can easily create and develop a new project and just as easily abandon any project which allows the absolute freedom to think and be innovative which is a great motivating factor for Google's employees. The non-financial reward for job enlargement at Google may include job rotation, which brings about job enrichment. This allows individuals to do more tasks as Google's organizational structure is by function. For instance, at Google there is a statement: "We encourage our employees, in addition to their regular projects, to spend 20% of their time working on what they think will most benefit Google." This is one of Google's famous philosophies called the "20% time" created by the founders and was the genesis for Gmail and Google News. (D'Onfro) Job rotation empowers employees as one obtains more responsibility and one can learn more about other departments. This could make it easier for employees move to other departments or even reduce project burnout.

Oracle can definitely take some advice by just looking at Google's unique culture being not typical of a technology corporation. Having a flexible workplace and many perks of good health care, free meals to even death benefits. This demonstrate that Google covers the first four levels of 'Physiological' of basic needs, 'Safety' needs, 'Love/ belonging' and 'Esteem' in Maslow's hierarch of needs, as seen in figure 5. (Oxford University Press 137) Having the first four levels that is considered as basic needs are surpassed in order to reach the peak of 'Self-actualization'. Looking at some of the words this entails in the box 'morality' Google makes an important stand on its transparency, by having a moto of "Don't be evil". (Ward) Another word is 'Creativity' as Google encourage this in the "20% time" rule, and so inspires its employees to take on personal projects of their own. (D'Onfro)



Fig. 5 Maslow's hierarchy of needs⁸



The analysis of Google using Maslow's hierarchy of needs has demonstrated that Google's employees are highly motivated. Google demonstrates intrinsic motivation as the motivation stems from satisfaction of carrying out an activity that employees are interested in and are given a great degree of freedom. (Oxford University Press) Whilst Oracle in it is revealed to have extrinsic motivators as job satisfaction is not always guaranteed however one would be compensated instead. At Oracle motivation is resulting from external factors for instance money.

Google values on have a customer first based approach however will not put in jeopardy the unhappiness of Google employees. Employee empowerment has played a key role into Google being the company it is today. Google's management style certainly could benefit other companies in the technology sector, however just not on Oracle. If Oracle had Google's decentralization structure over being a centralized structure the company would be the same as it is today. Without visionaries like Larry Ellison and having a definitive structure Oracle would not have advanced and expanded into the globally recognized brand it is today.

⁸ Oxford University Press. 137. *Business Management*. Oxford: Oxford University Press, 2014.



Success at Oracle

It is evident that Google's and Oracle's organizational structure and corporate culture are polar opposites. However, despite being different, both corporations are successful software technology corporations. Therefore, how can Oracle's success be measured. It can be measured and assessed from its share price raising over the years from \$0 to ranging around \$50 a share. One may also rate Oracle's worldwide success by its own client list of other billion dollar multinational businesses like Coca-Cola, Swarovski and Toyota which all employ Oracle for its services. (Oracle) Or it can be by Oracle having 430,000 plus customers worldwide in 175 different countries. By having more than 138,000 employees and 40,000 of them are developers and engineers Oracle has ensured for ongoing innovation and constant growth opportunities as shown in figure 6. (Oracle)

Fig. 6 A table of Oracle's innovation over the years⁹



Oracle started out with just being an innovative relational database. Oracle has increased and advanced and so pushed the rest of technology and competitors with them. (Oracle) By being first movers into this information technology, Oracle was essentially the creator of this market. Currently Oracle is the world's number 1 database available by having 'advanced

⁹ United State Securities and Exchange Commission. *ORACLE CORPORATION*. 16 April 2010. 27 October 2017. <https://www.sec.gov/Archives/edgar/data/1341439/000119312510085840/ddefa14a.htm>.



security, rapid analytics, greater agility, and significant cost savings.' Presently, Oracle offer aid servicers, virtualization software, storage equipment, a range of applications, seminar courses on Oracle's database are just to name a few services and even products Oracle offers. (Oracle) Some of these services highlight its dedication to its customers as Oracle has 16,000-support and services specialist that can speak 29 different languages.

The rapid advance of technology over the last 40 years has grown and allowed Oracle to thrive by the launching of the most successful enterprise computing products in the world. (United State Securities and Exchange Commission) All of these factors come down to Oracle's culture and organization of its structure. Oracle's corporate culture is a dominant factor that has lead Oracle to success, and could not happen without its organizational structure as well. In the end both these aspects have been essential to Oracle's success.



Conclusion

The organizational structure created by Oracle's ex-CEO, Larry Ellison, was influenced by his autocratic management style that created a person-centered aesthetics and brought value in the corporation's innovations. A belief that a worthy contribution does not go unnoticed is vitally important, and so driving its employees to attain unimaginable heights. A culture of strict accountability and great expectation has made Oracle the company it is today.

However, there are other notable factors, which have contributed to Oracle's success: non-financial benefits and leadership style.

In the key findings and analysis of its corporate culture, signify that the employees working at Oracle are highly motivated with the present leaders guiding their potential. A management style of strict accountability and control allows the company to excel in the market.

My finding also highlights that the organizational structure of the co-CEO arrangement of Mark Hurd and Safra Catz does truly work as their personal and business acumen, values and vision are fused together effortlessly with little conflict to form Oracle's continuing corporate culture and identity. Its corporate culture has significantly improved since the co-founder, Larry Ellison, relinquished his CEO position, now being less autocratic leadership. I have applied Business Management theories to Oracle's corporate culture and organizational effectiveness as well as the application of business tools and by comparing Google, which is a similar corporation, in order to ascertain the effectiveness of these factors, which contribute to Oracle's overall and rampant success.

This essay answered the research question, ***"To what extent can Oracle's success be contributed to its Corporate Culture and Organizational Structure?"*** Both of these interconnected aspects are key contributors to the performance and success to Oracle being a major multinational computer technology corporation over the last 40 years. These two aspects have definitively played critical roles in contributing to Oracle's worldwide and overall success.



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Appendix A



Irvine, California, USA



Toronto, Ontario, Canada

These are photographs of Oracle's offices, which I have come across on my travels. Whilst visiting California in July 2017, I was in shock to see the Oracle sign so I snapped a photo. The second photo on the right was taken while visiting Canada.



DANS QUELLE MESURE PEUT-ON DIRE QUE LA FONTAINE A RENOUVELÉ LE GENRE DE LA FABLE?



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Introduction

La fable est un genre littéraire qui vise à amener le lecteur à améliorer son comportement et sa façon de voir le monde, à réfléchir sur lui-même, tout en le distrayant : « Il s'agit de captiver, de divertir et d'enseigner. »¹ Formellement, la fable est constituée d'un récit court et concis qui met en scène « des personnages imaginaires, des animaux, des plantes ou des objets doués de parole et de pensée »², l'ensemble débouchant sur un message à portée morale et à vocation universelle. Les 240³ *Fables* de Jean de La Fontaine ont été écrites à partir de 1660, quand il avait 39 ans, et la publication des douze livres s'est faite en trois fois, échelonnée sur une vingtaine d'années. Le *Premier recueil*, qui comprend les livres I à VI est paru en 1668, le *Second recueil*, qui comprend les livres VII à XI, est paru entre 1678 et 1679 et, enfin, en 1694, est paru le douzième et dernier livre, un an avant la mort de l'écrivain⁴. Ces fables ont connu un immense succès, dès le vivant de leur auteur, et bien après sa mort. Aujourd'hui, bien que Jean de La Fontaine ait écrit une oeuvre très vaste et très diversifiée, la postérité a surtout retenu ses *Fables*, qui «dès l'origine ont été utilisées comme un instrument pédagogique pour les enfants des écoles»⁵. C'est sans doute cette vocation pédagogique qui, génération

¹ Nicolas SAULAIS, *Esopo, Jean de La Fontaine, Anouilh*, Folio plus classiques, Paris, 2010, p.101.

² *Ibid.*

³ Association pour le musée J. de La Fontaine, (<http://www.la-fontaine-ch-thierry.net/fables.htm>)

⁴ Alain-Marie BASSY et Yves LE PESTIPON, Introduction, chronologie et notes, la Fontaine, *Fables*, GF Flammarion, Paris, 2007, p. 517-521 et André LAGARDE et Laurent MICHARD, XVII, Bordas, Paris, 1970, p. 211.

⁵ Alain-Marie BASSY et Yves LE PESTIPON, *op.cit.*, p.8.



d'élèves après génération d'élèves, a fini par associer dans les esprits le genre de la fable au seul nom de La Fontaine, comme s'il l'avait inventé. Or, la fable est bien antérieure au XVII^{ème} siècle, et les prédécesseurs de La Fontaine remontent à l'Inde ancienne ou à l'antiquité gréco latine⁶. L'écrivain français n'est-il donc ni original ni personnel ? Dans quelle mesure a-t-il renouvelé le genre de la fable ? Pour répondre à cette question, un premier chapitre tentera de montrer que La Fontaine a surtout imité les fabulistes qui l'ont précédé. Puis un second chapitre s'emploiera à prouver que son " imitation n'est point un esclavage"⁷.

⁶ André LAGARDE et Laurent MICHARD, *op.cit.*, p. 214.

⁷ Jean de LA FONTAINE, *Epître à Huet*, 1687,
(<http://www.lafontaine.net/lesPoemes/affichePoeme.php?id=104>)



1. La Fontaine a surtout imité ses prédécesseurs

Le fabuliste du XVIII^{ème} siècle a imité ceux qui l'avaient précédé, a suivi le même objectif qu'eux et a utilisé les mêmes outils pour l'atteindre.

Cette imitation ne doit pas surprendre le lecteur du XXI^{ème} siècle car elle s'inscrit dans un contexte. Avant que les Modernes, vers 1687, ne viennent contester leurs thèses, les Anciens, dont Boileau, Racine, La Bruyère et La Fontaine prônent le culte des classiques comme Homère et Virgile⁸. C'est ce que fait La Fontaine dans son *Epître à Huet*, en 1687 : " Arts et guides, tout est dans les Champs Elysées [...] On s'égare en voulant tenir d'autres chemins"⁹.

a. Les prédécesseurs

Par conséquent, il ne faut pas s'étonner que les sources des *Fables* de La Fontaine soient aussi anciennes que variées. Elles remontent à l'Inde ancienne. En effet, à partir de 1644, le *Livre des lumières* de l'Indien Pilpay¹⁰, un moraliste du III^{ème} siècle à qui, au XVIII^{ème} siècle, on attribue le *Pantcha Tantra*, un recueil de fables écrites en sanskrit, qui commence à être traduit en français. La Fontaine ne cache pas cette référence. Au contraire, il s'en réclame ouvertement, en particulier

⁸ André LAGARDE et Laurent MICHARD, *op.cit.*, p.437.

⁹ (<http://www.lafontaine.net/lesPoemes/affichePoeme.php?id=104>)

¹⁰ Pilpay est un dérivé du nom Bidpai, qui se trouve dans la version arabe. Ceci explique les différences d'auteur du *Pantcha Tantra* en fonction de nos sources. (<https://oumma.com/la-fontaine-et-ses-sources-orientales/>)



dans les six derniers livres¹¹, comme dans "Pilpay jusqu'au soleil eût enfin remonté"¹², "Pilpay fait près du Gange arriver l'aventure"¹³. "Pilpay conte qu'ainsi la chose s'est passée"¹⁴. De plus, une dizaine de fables de La Fontaine racontent la même histoire que les récits de Pilpay. Par exemple, *La Tortue et les deux canards* de La Fontaine¹⁵ reprend le scénario de *La Tortue et les deux cygnes*¹⁶ de Bidpai / Pilpay. Ces deux fables mettent toutes deux en scène une tortue qui vivait en paix avec deux volatiles. Cependant, pour une raison différente dans les deux fables, la tortue veut s'en aller. Les deux oiseaux acceptent d'emmener la tortue à la seule condition qu'elle ne parle pas. Elle doit serrer le centre d'un bâton que les deux oiseaux tiennent chacun par un bout. Ces deux fables se terminent avec la mort de la tortue qui a lâché le bâton parce qu'elle n'a pas pu s'empêcher de parler¹⁷. Les deux fables partagent ensuite la même morale : celui qui, comme la tortue, ne suit pas les conseils de personnes bienveillantes en paie les conséquences. Il s'agit donc bien, ici, d'une imitation assumée.

Cependant, l'héritage le plus important, celui que La Fontaine ne cache pas non plus puisqu'au contraire il le revendique, c'est celui d'Esopé, un fabuliste grec dont on pense qu'il a vécu au Vème siècle avant J.-C. et auquel on attribue généralement la paternité du genre puisque "dès le Vème siècle, la fable est

¹¹ Dr. Mohammed HADJADJ-AOUL, *Les Fables de La Fontaine et leurs sources Orientale*, 2009, (<https://gerflint.fr/Base/Algerie5/hadjadj-aoul.pdf>)

¹² Jean de LA FONTAINE, *Fables*, GF Flammarion, Paris, 2007, Livre 9, Fable 7, *La Souris Métamorphosée en Fille*, v.58, p.275.

¹³ *Ibid.* Livre 12, Fable 12, *le Milan, le Roi et le Chasseur*, v.75, p.352.

¹⁴ *Ibid.* Livre 15, Fable 15, *Le Corbeau, La Gazelle, La Tortue et Le Rat*, v.121, p.358.

¹⁵ *Ibid.* Livre 10, Fable 2, *La Tortue et les deux Canards*, p.297.

¹⁶ BIDPAI, *Panchatantra*, Livre premier, Fable 14, (<http://www.ruedesfables.net/la-tortue-les-deux-cygnes/>)

¹⁷ Mohammad Javad KAMALI, *Aux origines d'une fable de La Fontaine dans les recueils de contes orientaux*, 2012, (http://reli.ui.ac.ir/article_20331_ae6c21944f764a908d1f1575b9d6f40d.pdf)



désignée comme discours ou récit ésopique¹⁸. En effet, La Fontaine se réclame d'Esopé d'entrée de jeu, puisque sa *Préface*¹⁹ ne comporte pas moins de huit références à son prestigieux prédécesseur, et puisque le vers liminaire de son poème adressé en exergue à "A Monseigneur le Dauphin" le met en avant : " Je chante les Héros dont Esope est le Père"²⁰. On trouve la même référence explicite dans la première ligne de la première adresse en prose "A Monseigneur le Dauphin" : " s'il y a quelque chose d'ingénieux dans la République des Lettres, c'est la manière dont Esope a débité sa morale."²¹ Une première et rapide mise en perspective des deux recueils de fables rend compte de leur étroite parenté. Par exemple, il suffit de constater que *La Cigale et les fourmis*²² d'Esopé et *La Cigale et la fourmi*²³ de La Fontaine ont des titres très approchants. De plus, le contenu narratif est le même puisque les deux cigales négligentes viennent mendier chez les fourmis industrieuses et se heurtent à un refus au nom de la notion de mérite. La morale est donc qu'il faut prévoir l'avenir et travailler au lieu de s'amuser. Par ailleurs, dans sa *Préface*, La Fontaine revendique d'autres sources d'inspiration et même d'imitation, comme Phèdre, un poète latin du 1er siècle après J.-C²⁴, ou Avianus, un autre poète latin du IV ou Vème siècle av J.-C²⁵. Enfin, sans qu'il en soit question dans la *Préface*, les études ont révélé que La Fontaine avait aussi puisé chez Virgile, Ovide, Rabelais ou Marie de France²⁶.

¹⁸ Daniel LOAYZA, "Introduction" à ESOPE, *Fables*, Traduit du grec ancien par Daniel Loayza, GF Flammarion, Paris, 2014.

¹⁹ Jean de LA FONTAINE, *Fables*, *op.cit.*, p. 45-51.

²⁰ *Ibid.*, p.73.

²¹ *Ibid.*, p.41.

²² ESOPE. *Fables*. Traduit du grec ancien par Daniel Loayza.GF Flammarion, Paris, 2014, Fable 61, p.89.

²³ Jean de LA FONTAINE, *Fables*, *op.cit.*, p75.

²⁴ André LAGARDE et Laurent MICHARD, *op.cit.*,p.214.

²⁵ *Ibid.*

²⁶ Nicolas SAULAIS, *op.cit.*, p.105-106.



Cependant, la référence à Esope étant la plus évidente et la plus importante, la suite du présent travail s'attachera à répondre à la question de recherche en interrogeant la filiation entre les textes d'Esope et ceux de La Fontaine, même si le paragraphe suivant va nous ramener un instant à Bidpai/ Pilpay pour analyser la similarité entre les objectifs des anciens et ceux de La Fontaine.

b. L'objectif

En effet, comme celles des Anciens, les *Fables* de La Fontaine ont pour but principal d'enseigner, c'est à dire de montrer. Tout comme Bidpai / Pilpay avait écrit pour un Râja, c'est à dire un Monarque, pour lui enseigner l'art de gouverner, comme l'indique le sous-titre de son œuvre "La conduite des rois"²⁷, La Fontaine s'adresse à un Prince, à un futur gouvernant. Il s'agit du Dauphin, le fils de Louis XIV, alors âgé de sept ans. Le pédagogue veut lui montrer le fonctionnement du monde en faisant en sorte qu'il "apprenne sans peine, ou, pour mieux parler, avec plaisir, tout ce qu'il est nécessaire qu'un Prince sache"²⁸.

Dans ce souci d'enseigner sans ennuyer pour que le lecteur apprenne en se divertissant, La Fontaine se réclame d'Esope, dont l'"Ouvrage répand insensiblement dans une âme les semences de la vertu, et lui apprend à se connaître sans qu'elle s'aperçoive de cette étude"²⁹. Autrement dit, La Fontaine emprunte à ses prédécesseurs la "double dimension ludique et instructive"³⁰ de la fable.

²⁷ (<http://gallica.bnf.fr/ark:/12148/bpt6k5674720s/f9.image>)

²⁸ Jean de LA FONTAINE, *Fables*, op.cit., p.41.

²⁹ *Ibid.*

³⁰ Nicolas SAULAIS, op.cit., p.108.



En clair, les objectifs de La Fontaine et ceux de ses prédécesseurs sont les mêmes. Les outils pour les atteindre sont-ils aussi similaires ?

c. Les outils

Il semble que les outils soient les mêmes, puisque l'écrivain du XVII^{ème} siècle utilise le même instrument de travail que ses prédécesseurs : la transformation animalière.

Ce ressort sert à la fois l'aspect plaisant des textes mais aussi permet à l'écrivain de contourner la censure et de se protéger contre les puissants qui pourraient être furieux d'être remis en question. A l'époque d'Esopé, on "emprisonnait ou tuait ceux qui disaient une vérité désagréable à entendre"³¹ et à celle de La Fontaine, on pouvait aussi se retrouver du jour au lendemain dans la disgrâce après avoir été favori du Roi. Par exemple, La Fontaine, protégé de Fouquet, le surintendant des finances, a vu celui-ci au faîte de la gloire en août 1661 et au fond d'une sombre prison en septembre de la même année³². Il avait donc bien des raisons d'être prudent.

Enfin, le bestiaire des *Fables* de La Fontaine n'est pas différent du bestiaire de ses prédécesseurs car il existe une sorte de constante de la poésie animalière "dont le bestiaire tient plus de l'allégorie que de l'observation naturelle"³³, mais s'en inspire tout de même. Ainsi, chez La Fontaine comme chez Esopé, le lièvre est "placé sous le signe de la couardise et de la désinvolture"³⁴, comme dans *Les lièvres*

³¹ Nicolas SAULAS, *op.cit.*, p.115.

³² Jean de LA FONTAINE, *Fables*, *op.cit.*, Chronologie, p.517.

³³ Patrick DANDREY, *Fabrique des Fables*, Klincksieck, Paris, 2010, p.126.

³⁴ Patrick DANDREY, *op.cit.*, p.162.



et les grenouilles³⁵ d'Esopé, dont le titre est seulement légèrement modifié chez La Fontaine avec un simple ajout du singulier avec *le lièvre*³⁶. Dans les deux cas, un lièvre, "peureux" chez Esopé et "poltron" chez La Fontaine a peur au moindre bruit. De même, le lièvre de La Fontaine est aussi désinvolte que celui d'Esopé, car dans les fables au titre identique, "la tortue et le lièvre"³⁷, lorsque la course entre la tortue et le lièvre débute, le lièvre se met à dormir en pensant pouvoir rattraper la tortue facilement, mais il perd le défi à cause de sa désinvolture. De plus, le renard est, chez l'un comme chez l'autre, intelligent, rusé, prudent et adroit dans *Le corbeau et le renard*³⁸ où un corbeau orgueilleux perché sur un arbre est abordé par un renard rusé qui le fait chanter pour lui prendre son morceau de viande devenu fromage chez La Fontaine. De même, le chien et le loup de La Fontaine ressemblent beaucoup à ceux d'Esopé car le premier symbolise l'esclavage et le second la liberté, comme dans la fable commune aux deux écrivains : *Le loup et le chien*³⁹. Dans les deux cas, le loup affamé préfère sa liberté au confort du chien bien nourri mais attaché.

Par conséquent, nous pourrions répondre par la négative à la question de recherche. La Fontaine ne semble pas avoir renouvelé le genre de la fable puisque les constantes entre son travail et celui de ses prédécesseurs sont aussi nombreuses que flagrantes. Cependant, il s'est lui-même défendu d'avoir servilement copié, puisque dans l'*Epître* qu'il adressa en 1687 à l'homme de lettres

³⁵ ESOPÉ, *Fables*, Traduit du grec ancien par Daniel Loayza. GF Flammarion, Paris, 2014, Fable 138, p.149.

³⁶ Jean de LA FONTAINE, *Fables*, GF Flammarion, Paris, 2007, Fable 14, p.109.

³⁷ ESOPÉ, *op.cit.*, Fable 226, p.213.

³⁸ *Ibid.*, Fable 124, p.139 et Jean de LA FONTAINE, *Fables*, *op.cit.*, Fable 2, p.76.

³⁹ ESOPÉ, *Fables*, Traduit du grec ancien par Emilie Chambry. Arvensa, 2014, version numérique, Fable 226, p.100 et Jean de LA FONTAINE, *Fables*, *op.cit.*, Fable 5, p.77



Huet, qui s'opposait aux Modernes, il affirmait : “ Mon imitation n'est point un esclavage”⁴⁰.

2. Cette imitation n'est point un esclavage.

En effet, loin de se livrer à du plagiat, La Fontaine innove et rénove le genre de la fable. Nous nous attarderons sur quelques domaines où l'innovation est la plus marquante : l'architecture des textes, le style, le bestiaire, le lien avec l'actualité, le lyrisme et la portée philosophique des fables.

a. L'architecture des textes

Avec La Fontaine, l'architecture des fables se diversifie. Chez Esope, les fables ont pratiquement toutes la même structure. Un récit mettant en scène des animaux, concis, débutant *in medias res*, est suivi d'une morale de deux ou trois lignes au plus, introduite de façon très pragmatique et systématique par la formule : “ Cette fable montre que...” En revanche, l'écrivain français varie ce schéma. Par exemple, la morale peut se trouver dans le vers liminaire, avant le récit, au lieu de clore la fable, après le récit. Par exemple, la morale du *Loup et l'agneau* d'Esope se trouve comme toutes les autres après l'histoire du loup de mauvaise foi qui dévore l'agneau sous un prétexte futile : “ Cette fable montre qu'auprès des gens décidés à

⁴⁰ Jean de La FONTAINE, *Epître à Huet*,
(<http://www.lafontaine.net/lesPoemes/affichePoeme.php?id=104>)



faire le mal, la plus juste défense reste sans effet.”⁴¹ La Fontaine, lui, ouvre sa fable sur une formule rendue percutante et provocante par le lien entre les trois mots “fort”, “toujours” et “meilleure” : “ La raison du plus fort est toujours la meilleure”. Ce vers est suivi de l’annonce du récit clairement montré comme une illustration de l’assertion initiale : “ nous l’allons montrer tout à l’heure.”⁴² Dans d’autres fables, la morale peut se dédoubler et encadrer le récit. C’est le cas dans *Le Laboureur et ses enfants*, elle aussi commune aux deux écrivains. Dans les deux cas, un laboureur fait croire à ses enfants qu’un trésor est caché dans son pré afin de les inciter à fouiller la terre, et ce faisant, ils cultiveront leur champ et gagneront de l’argent avec le produit de leur récolte. Esope termine le récit avec le laconique “ Cette fable montre que le travail est pour les hommes un trésor”, alors que La Fontaine ouvre son texte par une exhortation, “ Travaillez, prenez de la peine, /C’est le fonds qui manque le moins”⁴³ et le termine sur le même apophtegme qu’Esope, mais l’effet est double car la construction en anaplodiplose renforce la capacité de persuasion du poète moraliste. La place de la morale n’est pas la seule innovation architecturale de La Fontaine par rapport au travail de son prédécesseur grec. La place qu’il accorde aux dialogues est en effet bien plus importante dans ses fables que dans celles d’Esope. Par exemple, dans *Le loup et l’agneau* ⁴⁴ d’Esope, l’affrontement verbal entre les deux animaux est surtout rapporté au style indirect : “ il l’accusa de troubler l’eau et de l’empêcher de boire. L’agneau répondit qu’il ne buvait que du bout des lèvres”. La Fontaine transforme ce récit en une scène vivante en rapportant toutes les paroles des deux animaux au style direct sous forme de dialogue appuyé sur des phrases

⁴¹ ESOPÉ, *Fables*. Traduit du grec ancien par Daniel Loayza, *op.cit.*, Fable 155, p.161.

⁴² Jean de LA FONTAINE, *Fables*, *op.cit.*, *Le loup et l’agneau*, Fable X, Livre I, p.83.

⁴³ *Ibid.*, *Le laboureur et ses enfants*, Fable IX, Livre V, p.171.

⁴⁴ ESOPÉ, *Fables*, *op.cit.*, Fable 155, p.161.



incises : “ Qui te rend si hardi de troubler mon breuvage?/ Dit cet animal plein de rage. / Tu seras châtié de ta témérité. / - Sire, répond l'Agneau, que votre Majesté / Ne se mette pas en colère;/ Mais plutôt qu'elle considère /Que je me va désaltérant
»⁴⁵ etc.

b. Le style

Si l'architecture des fables marque une réelle nouveauté, l'innovation majeure, celle qui distingue immédiatement La Fontaine d'Esope dans le genre même du texte, c'est la poésie. Là où Esope écrit en prose, La Fontaine choisit le vers. De plus, la monotonie issue de la prose disparaît au profit de la diversité dans la versification de La Fontaine. Par exemple, *Le Chêne et le roseau* ⁴⁶, d'Esope, constitué de 6 lignes en prose, devient chez La Fontaine un ensemble de 32 vers alternant heptasyllabes, octosyllabes et alexandrins aux rimes tantôt croisées, embrassées ou plates.⁴⁷ Cette virtuosité fait de cette histoire opposant le solide chêne arrogant au frêle et humble roseau un objet d'art, un texte chantant facile à mémoriser, divertissant et riche en références culturelles à double emploi. En effet, “ Tout vous est Aquilon, tout me semble Zéphyr” contribue d'une part à élever le niveau de l'échange entre le chêne et le roseau et d'autre part à construire le réseau d'oppositions et d'antithèses qui traverse la fable entre force et fragilité, supériorité et infériorité⁴⁸.

⁴⁵ Jean de LA FONTAINE, *Fables*, op.cit., *Le loup et l'agneau*, Fable X, Livre I, p.83.

⁴⁶ ESOPE. *Fables*. Traduit du grec ancien par Daniel Loayza, op.cit., Fable 70, p.97.

⁴⁷ Jean de LA FONTAINE, *Fables*, op.cit., *Le chêne et le roseau*, Fable XXII, Livre 1, p.94.

⁴⁸ Nicolas SAULAIS, op.cit., p.119.



c. Le bestiaire

De plus, si La Fontaine imite Esope, il est loin d'être servile, puisqu'il nuance le caractère assigné à certains animaux.⁴⁹ Son bestiaire est beaucoup plus varié. Par exemple, si le singe est menteur, naïf, vantard et sot chez Esope, comme dans *Le renard et le singe couronné*⁵⁰, chez La Fontaine, le singe est plus complexe. Oui, il est menteur car c'est un charlatan, mais il n'est pas naïf, au contraire. Par exemple, dans *Le singe et le léopard*⁵¹, au cours d'une foire, le singe triomphe du léopard et a bien plus de succès que lui alors qu'il est plus laid, parce qu'il a plus d'esprit que le léopard qui n'a qu'une belle fourrure. Même chose pour le loup, qui, chez Esope, symbolise la cruauté et la "force gloutonne"⁵², comme chez la Fontaine avec "Le loup de l'agneau", commun aux deux écrivains. Cependant, chez La Fontaine, le loup est beaucoup plus subtil que cela. Certes, comme chez Esope, il est naïf. Par exemple, dans *Le loup devenu berger*⁵³ il croit qu'en s'habillant en berger il pourra manger les brebis. Certes, comme chez Esope dans *Le loup et le héron*⁵⁴ il est ingrat et arrogant dans *Le loup et la cigogne*⁵⁵, refusant de payer l'oiseau qui vient de le sauver. Cependant, il est aussi philosophe et représente la liberté individuelle⁵⁶ dans plusieurs fables comme *Le loup et le chien*⁵⁷ mais aussi dans la longue fable *Les*

⁴⁹ Patrick DANDREY, *op.cit.*, p.162.

⁵⁰ ESOPE, *Fables*, Traduit du grec ancien par Daniel Loayza, *op.cit.*, Fable 81, p.107.

⁵¹ Jean de LA FONTAINE, *Fables*, *op.cit.*, *Le chêne et le roseau*, Fable III, Livre IX, p.270.

⁵² *Quelques exemples d'animaux chez Esope*, 2010. (<http://lcomloth.over-blog.com/article-quelques-exemples-d-animaux-chez-esope-43510879.html>)

⁵³ Jean de LA FONTAINE, *Fables*, *op.cit.*, Fable III, Livre III, p.123.

⁵⁴ ESOPE, *Fables*, Traduit du grec ancien par Daniel Loayza, *op.cit.*, Fable 156, p.163.

⁵⁵ Jean de LA FONTAINE, *Fables*, *op.cit.*, Fable IX, Livre III, p.129.

⁵⁶ Christiane SINNIG-HAAS, *Dossier pédagogique*. (<https://www.musee-jean-de-la-fontaine.fr/UserFiles/ressources-peda/Musee-jean-de-la-fontaine-Les-animaux.pdf>)

⁵⁷ Jean de LA FONTAINE, *Fables*, *op.cit.*, Fable V, Livre I, p.77.



*compagnons d'Ulysse*⁵⁸. En effet, le loup est capable de rétorquer à Ulysse qui veut le ramener à l'état humain qu'il " vaut mieux être un loup qu'un homme". "Si j'étais Homme [...]/ Aimerais-je moins le carnage? / Pour un mot quelquefois vous vous étranglez tous/ Ne vous êtes-vous pas l'un à l'autre des loups ?" Enfin, le lion semble avoir les mêmes caractéristiques chez les deux fabulistes, car il est dans les deux cas le Roi des animaux, symbolise la force, est volontiers tyrannique et tueur, car chasseur de nature, comme dans *Le lion et l'âne chassant de compagnie*⁵⁹ chez Esope devenu *Le lion et l'âne chassant*⁶⁰ chez La Fontaine. Cependant, chez La Fontaine, il est aussi hypocrite, en particulier dans *Les animaux malades de la peste*⁶¹ où il fait semblant de s'attribuer une responsabilité dans le malheur qui s'abat sur son peuple alors qu'il sait que les flatteurs vont le dédouaner. Avec cette parodie de justice où les plus faibles sont inévitablement les perdants, puisque " Selon que vous serez puissant ou misérable/ Les jugements de cour vous rendront blanc ou noir", on touche ici à une des particularités des *Fables* de La Fontaine, qui est la dimension politique. Il fallait bien du courage au poète pour oser écrire et publier une telle satire à peine déguisée des pratiques arbitraires et injustes de Louis XIV, alors qu'on embastillait si facilement les opposants et que l'art le plus partagé à la Cour était celui de la flatterie.

⁵⁸ Jean de LA FONTAINE, *Fables*, *op.cit.*, Fable I, Livre XII, p.335.

⁵⁹ ESOPE. *Fables*. Traduit du grec ancien par Emilie Chambry. *op.cit.*, Fable 208, p.92.

⁶⁰ Jean de LA FONTAINE, *Fables*, *op.cit.*, Fable XIX, Livre II, p.114.

⁶¹ *Ibid.*, Fable I, Livre VII, p.203.



d. Le lien avec l'actualité

En outre, l'originalité des fables de La Fontaine réside dans leur lien avec l'actualité qui lui était contemporaine. Ainsi, elles sont aussi plus actualisées que celles d'Esope puisqu'elles peuvent faire allusion à un contexte précis. Par exemple, *La ligue des rats*⁶² évoque clairement des événements politiques et militaires de 1672, quand Louis XIV a envahi la Hollande et qu'une coalition de monarques a tenté de secourir ce pays. Le Chat représente Louis XIV et la souris représente la Hollande, aidée par les rats. Le chat y apparaît rusé et avisé, les rats sont ridiculisés. Cette fable satirique tend donc à flatter le roi sans penser à remettre en cause sa décision d'envahir la Hollande, et à attirer les rieurs de son côté, afin que les lecteurs se rangent du côté du roi.

e. Le lyrisme

Un autre élargissement par rapport à la fable antique réside dans l'introduction d'une tonalité beaucoup plus personnelle, voire lyrique. Par exemple, dans *Le songe d'un habitant du Mogol*⁶³, qui traite de la solitude, il introduit ses pensées qu'il présente sans aucun camouflage, avec le "je" : " Solitude, où je trouve une douceur secrète,/Lieux que j'aimai toujours, ne pourrai-je jamais,/ Loin du monde et du bruit, goûter l'ombre et le frais? "

⁶² Jean de LA FONTAINE, *Fables*, *op.cit.*, Appendice, p.411.

⁶³ *Ibid.*, Fable IV, Livre XI, p.322.



f. La portée philosophique des fables

La marque personnelle de La Fontaine réside aussi dans l'aspect philosophique de certaines fables. C'est le cas, par exemple, dans *La mort et le mourant*⁶⁴, qui demande aux lecteurs de penser à cet aspect de la vie au lieu de l'occulter ou de le refuser : " La Mort ne surprend point le sage; / Il est toujours prêt à partir,/ S'étant su lui-même avertir/ Du temps où l'on se doit résoudre à ce passage." En marge de ces considérations philosophiques, La Fontaine aborde aussi des points qui pourraient figurer dans un cours de Théorie de la Connaissance ! Par exemple, dans *Un animal dans la lune*⁶⁵, il aborde la question de l'accession à la connaissance dans le domaine des Sciences par les sens et la raison en usant d'arguments et contre-arguments, d'exemples et contre-exemples pour en arriver à la conclusion que " Quand l'eau courbe un bâton ma raison le redresse,/ La raison décide en maîtresse. / Mes yeux, moyennant ce secours,/ Ne me trompent jamais , en me mentant toujours."

Enfin, les morales de La Fontaine ne se démarquent pas de celles d'Esopé uniquement par la place qu'elles occupent. Ainsi, le fabuliste du XVII^{ème} siècle peut être beaucoup plus explicite qu'Esopé quant à la portée et l'application de la morale. Par exemple, le héron, allégorie du dédain chez les deux auteurs, trouve un prolongement chez La Fontaine. En effet, comme le héron qui, après avoir dédaigné les brochets, les carpes, les tanches et les goujons pour son repas, dut se contenter

⁶⁴ Jean de LA FONTAINE, *Fables*, *op.cit.*, Fable I, Livre VII, p.229.

⁶⁵ *Ibid.*, Jean de LA FONTAINE, *Fables*, Fable XVII, Livre VII, p.226.



d'un limaçon, les jeunes filles trop difficiles dans leur quête d'un mari risquent, l'âge venant, devoir se contenter d'un prétendant sans intérêt.⁶⁶

⁶⁶ Jean de LA FONTAINE, *Fables*, GF Flammarion, Paris, 2007, *Le Héron et la fille*, Fable IV, Livre VII, p.207.



Conclusion

En somme, notre étude a montré que La Fontaine a renouvelé le genre de la fable. Certes, il a bel et bien imité les Anciens, il l'a même revendiqué. Aujourd'hui, on parlerait même de plagiat, même avoué ! Cependant, même si le contexte était différent au XVII^e siècle, puisque l'imitation des Anciens, loin d'être un crime, était une vertu, cette imitation assumée était loin d'être un esclavage. Au contraire, elle était un hommage, une reconnaissance, et en même temps un renouvellement, une réinvention, une "imitation originale en quelque sorte"⁶⁷. La Fontaine n'était pas seulement "un Esope français". Il a donné ses lettres de noblesse au genre de la fable et en a fait un objet de beauté, un objet d'art. Les enfants des écoles les apprennent, les chantent, les dessinent, et de nombreux secteurs d'activité s'inspirent des plus célèbres passages pour leur publicité ou leur logo car ils savent qu'ils atteindront ainsi une mémoire collective solidement ancrée. Par exemple, "Quand la bise sera venue, retrouvez votre fonds de prévoyance XXX " ou " Ne laissez pas le fromage XXX au corbeau ". Les années et les siècles passant, La Fontaine lui-même sera imité mais pas servilement, par d'autres écrivains qui eux aussi renouvelleront le genre de la fable. C'est le cas de Jean Anouilh, qui, dans ses *Fables*, publiées en 1962, détourne les personnages de La Fontaine, les transforme et les adapte à la société dans laquelle il vivait, se servant du pouvoir hybride de la fable pour dénoncer, accuser et faire réfléchir tout en amusant son public.

⁶⁷ André LAGARDE et Laurent MICHARD, *op.cit.*, p.214.



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LA POLITIQUE D'ASSIMILATION FRANÇAISE: LA DISCRIMINATION, L'OPPRESSION, L'HYPOCRISIE PENDANT LA PERIODE COLONIALISTE AU CAMEROUN

FRENCH



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L'Introduction

Un des plus grands mouvements idéologiques et littéraires qui développaient pendant le dix-neuvième siècle était la négritude, un mot qui « désigne l'ensemble des caractéristiques et valeurs culturelles des peuples de race noire. »¹ Selon un des intellectuels africains francophones qui créaient le mouvement, la négritude « est la simple reconnaissance du fait d'être noir, et l'acceptation de ce fait, [du] destin de Noir, de l'histoire et de la culture. »² Spécifiquement, la négritude était une réaction à la politique d'assimilation coloniale dans les pays francophones. Cette politique, présentée par la juriste française Arthur Girault dans son ouvrage *Principes de colonisation et de législation coloniale*, encourageait les Africains français d'adopter la langue de leurs colonisateurs et de s'intégrer à la culture française afin de devenir à terme des citoyens.³ Girault et ses défenseurs prétendaient que le but de l'assimilation « était la création progressive de véritables départements français »⁴ ; pourtant, dans son roman *Une Vie de Boy* Ferdinand Oyono, un écrivain estimé de la négritude, exprime que cette politique aliénait les Camerounais de leur culture et ne faisait rien pour améliorer leur condition. Pour vraiment découvrir la nature parasite des relations qui existaient entre les Camerounais et les Français et pour comprendre les répercussions néfastes du colonialisme, on va examiner ce roman, un journal intime séparé en deux cahiers, en répondant à la question suivante : **Dans quelle mesure est-ce que les thèmes et les personnages dans *Une Vie de Boy* de Ferdinand Oyono reflètent la discrimination, l'oppression et l'hypocrisie subies par les Camerounais pendant la période de colonisation française ?** Pour ce faire efficacement, on va d'abord analyser la discrimination, l'oppression et

¹ *Négritude*, Toupictionnaire, Web, 14 août 2017.

² Léopold Sédar Senghor, *Négritude et civilisation de l'universel* (Paris : Editions du Seuil, 1977), 269-270, Imprimé.

³ Arthur Girault, *Principes de colonisation et de législation coloniale* (Paris : L. Larose et L. Tenin, 1907), 3-4, Imprimé.

⁴ Ibid, 364.



l'hypocrisie en examinant chaque facette de Dangan, la ville qui est le centre de la colonie française dans le roman, et en étudiant le narrateur Toundi, un garçon camerounais. De plus, afin de comprendre le contexte du roman, on va intégrer les commentaires généraux sur la colonisation. Finalement, on va conclure que ce roman démontre définitivement les injustices immenses subies par les Camerounais malgré la politique d'assimilation française en vigueur au Cameroun.

La Discrimination

La Perte de L'Identité

Oyono utilise la perte de l'identité des Camerounais pour critiquer la discrimination qui était enfoncée dans la colonie française. Oyono exprime d'abord le désir des Blancs de « priver le Noir de son individualité, » en l'immergeant « dans la masse indifférenciée de ses semblables » et en volant son « existence personnelle. »⁵ Au début, dans le premier cahier, Toundi s'échappe de sa maison, où son père le battait et lui privait de nourriture, et se joint au Père Gilbert, qui dirige la mission chrétienne de Dangan.⁶ En essayant d'effacer les principes culturels de Toundi, le Père Gilbert le baptise et lui donne « le nom de Joseph. »⁷ Avec ces petites actions du Père, Oyono exprime le désir de la mission française de réapprendre aux enfants noirs dans la manière des Français, en changeant leurs coutumes. Bien que d'abord Toundi soit ravi d'être français, Oyono prédit les actions des Blancs, qui n'étaient pas satisfaits des principes « sauvages » des Camerounais. De plus, le Père présente Toundi « comme son chef d'œuvre, » un boy « qui sait lire et écrire, servir la messe, dresser le couvert, balayer sa chambre,

⁵ Jacques Chevrier. « *Une Vie de Boy*, » Oyono : analyse critique (Paris : Hatier, 1977), 47, Imprimé.

⁶ Ferdinand Oyono. *Une Vie de Boy* (Paris : Julliard, 1956), 10, Imprimé.

⁷ Oyono, 16.



faire son lit ... »⁸ A l'évidence, le Père considère Toundi un objet dont il peut faire étalage devant les Blancs, se vantant de son succès de domestiquer un Africain. Tous ces sentiments se manifestent quand Oyono écrit que « pour les Blancs, tous les nègres ont la même gueule. »⁹ Encore, la discrimination raciale est évidente quand les Blancs refusent de reconnaître des Camerounais, en pensant qu'ils ont une responsabilité de Dieu de modifier les habitudes des Noirs sans raison. Enfin, Oyono illustre une « espèce de tour de passe-passe qui permet d'escamoter la personne »¹⁰ que les Blancs utilisent pour parler des Noirs. On note que les Blancs utilisent différemment les pronoms « Il » et « Ils » pour grouper tous les Noirs dans une masse indiscernable. Par exemple, comme le régisseur de prison observe à propos de Toundi, « *Il* n'ose pas nous regarder... *Il* est dangereux » et continue, « C'est comme ça chez les indigènes. Quand *ils* n'osent plus vous regarder, c'est qu'*ils* ont une idée bien arrêtée dans leur tête de bois. »¹¹ Ainsi, M. Moreau utilise le pronom « ils » pour classer tous les Noirs en utilisant des stéréotypes, pour les priver de leur droit d'identité, et enfin comme une méthode de les réprimer.

La Déshumanisation

Outre le traitement de Toundi, Oyono continue d'exprimer la discrimination des Blancs par la déshumanisation des Noirs. En fait, quand les missionnaires adoptent Toundi, ils lui enseignent que « depuis l'arrivée des Blancs, [sa race] comprend que tous les autres hommes ne sont pas des animaux. »¹² Les Camerounais se sont caractérisés encore comme des sauvages primitifs qui ont désespérément besoin de l'aide des Blancs pour être civilisés. C'est exactement cette mentalité « qui contribue à transfigurer le processus brutal d'expropriation colonialiste en

⁸ Ibid, 24.

⁹ Ibid, 44.

¹⁰ Chevrier, 47.

¹¹ Oyono, 120-121.

¹² Ibid, 16.



mission civilisatrice et humanitaire. »¹³ Cette idée est particulièrement présente quand les missionnaires viennent en premier au village du Toundi sur une mission de « paix. » En essayant d'attirer l'attention des enfants, les Blancs lancent les « petits cubes sucrés [aux enfants] comme on jette du grain aux poules. »¹⁴ Avec cette comparaison, Oyono révèle la mentalité supérieure et condescendante des Blancs, qui avilissent les Noirs par leurs gestes dérogoires. Toundi lui-même compare ses actions aux « perroquets sauvages » qu'il attire avec des grains de maïs.¹⁵ De plus, ce traitement est amplifié par le comportement du Père Gilbert envers Toundi. Selon Toundi, le Père « le considère comme un petit animal familier, » pas comme un être humain.¹⁶ Bien que Toundi semble insensible à la signification de cette comparaison, Oyono utilise cela pour démontrer que les Blancs considèrent les Noirs leurs inférieurs. De plus, quand le Père Gilbert meurt et Toundi commence à travailler pour le Commandant, Toundi admet encore qu'il est inférieur aux Blancs, en disant « le chien du roi est le roi des chiens. »¹⁷ Avec la comparaison entre des boys et des chiens, Oyono exprime que pour les Blancs, toutes les domestiques noires ne sont pas meilleures que les chiens barbares et incultes. Dans l'ensemble, Oyono utilise ces instances de la déshumanisation pour démontrer que les Blancs ne traitaient jamais les Camerounais d'une manière égale malgré la politique d'assimilation.

La Société Discriminatoire

Outre le traitement de Toundi individuellement dans *Une Vie de Boy*, Oyono représente la société d'ensemble comme raciste et discriminatoire. Bien que l'expérience de Toundi soit particulièrement avec les prêtres et les missionnaires de Dangan en premier, Oyono exprime que

¹³ Alain Accardo. *Introduction à une sociologie critique* (3e éd, Marseille : Agone, 2006), 38, Imprimé.

¹⁴ Oyono, 16.

¹⁵ Ibid, 22.

¹⁶ Ibid, 24.

¹⁷ Ibid, 32.



la discrimination raciale est enracinée dans la société, en attirant l'attention aux stéréotypes raciaux. Ces stéréotypes s'exposent dans les discussions des habitants de la colonie française, surtout dans les discussions de l'éducation des Camerounais. Par exemple, Monsieur Salvain, qui dirige l'École officielle de Dangan, dit avec grand surpris, « Les petits Noirs sont aussi intelligents que nos petits, » en parlant avec le Commandant.¹⁸ Cette réaction de surprise reflète l'étendue de la discrimination envers les Camerounais, qui sont censées être inintelligentes et inéducables. Cette mentalité est adoptée par Madame Salvain, la femme de Monsieur Salvain, qui, en réponse au commentaire de son mari, remarque que les élèves de son mari sont spéciaux et « tous les autres ne valent pas la peine qu'on s'intéresse à eux » parce qu'ils sont « paresseux, » « voleurs, » et « menteurs. »¹⁹ Cependant, avec le traitement cruel de Toundi plus tard, Oyono démontre que les Blancs imaginent ces stéréotypes dégradants sans indice. Sans doute, les Blancs utilisent cette supposition, celle que les Noirs sont des « enfants » faibles d'esprit, pour soutenir la maltraitance et l'oppression envers les Noirs. Car, selon l'écrivain Albert Memmi, « plus l'oppression augmente, plus le colonisateur a besoin de justification, plus il doit avilir le colonisé, plus il se sent coupable, plus il doit se justifier... »²⁰

Pourtant, Mme Salvain n'est pas seule dans cette société ; quand M. Salvain partage plus tard l'intelligence des Noirs qu'il enseigne dans une discussion avec les principaux Blancs de la société, « chacun, pour le contredire, raconte sa petite histoire personnelle avec un indigène pour conclure que le nègre n'est qu'un enfant ou un couillon. »²¹ En d'autres termes, comme l'écrivain Frantz Fanon le décrit, on refuse de considérer les Noirs instruits « comme d'authentiques nègres » parce que « le nègre c'est le sauvage, tandis que l'étudiant est un

¹⁸ Ibid, 50.

¹⁹ Ibid, 51.

²⁰ Albert Memmi, *Portrait du colonisé, précédé de : Portrait du colonisateur* (Paris : Gallimard, 1957), 156, Imprimé.

²¹ Oyono, 81.



évolué. »²² Par exemple, pour réfuter l'intelligence des Camerounais, le commissaire « Gosier d'Oiseau, » un individu ridicule pour son cou long, commente sur « le péril noir » quand il demande, « Qu'allait devenir la civilisation, » s'en fâchant que la « pauvre France » soit dirigée par les ministres noirs.²³ Ces commentaires sont essentiellement racistes et font preuve des vrais sentiments des Blancs, qui ne pensent jamais que les Noirs sont égaux. De plus, quand M. Salvain essaie de réfuter les commentaires discriminatoires, M. Fernand, un habitant Blanc, se fâche contre lui, en disant que M. Salvain est un traître pour « mener une activité qui n'est pas digne d'un Français de France. »²⁴ M. Fernand continue à exprimer la honte prétendue d'instruire les Camerounais, en soutenant avec écœurement que M. Salvain leur enseigne qu'ils sont « des hommes comme [les Blancs]. »²⁵ Outre le racisme évident et inébranlable de ces remarques, on est stupéfait que M. Fernand souligne les mots « des hommes, » en suggérant que les Noirs ne sont pas assez méritants d'être traités comme les êtres humains, comme on a remarqué dans la dernière partie. En somme, la discrimination dans *Une Vie de Boy* n'est pas limitée aux actions dégradantes envers Toundi, mais elle est liée fortement aux principes et aux valeurs des Blancs, entravant le traitement égal entre les deux races. Pourtant, ce n'est pas surprenant qu'il soit impossible de séparer le colonialisme et le racisme, car historiquement « le racisme résume et symbolise la relation fondamentale qui unit colonialiste et colonisé. »²⁶

²² Frantz Fanon, *Peau Noire Masques Blancs* (Paris : Editions du Seuil, 1952), 82, Imprime.

²³ Oyono, 82-83.

²⁴ Ibid, 80.

²⁵ Ibid, 80.

²⁶ Fanon, 99.



L'Oppression

Les Administrateurs

Afin qu'on analyse l'oppression dans le contexte du colonialisme français, il faut qu'on définisse le terme « l'oppression, » en soulignant la différence entre celle-là et la discrimination. Bien que la discrimination soit une forme d'oppression, l'oppression diffère en ce qu'elle est profondément enracinée dans l'administration d'une société. Bien entendu, « dans les institutions, dans la nature des échanges et de la production, le racisme est inscrit, »²⁷ et c'était certainement ce qui déclenche l'oppression du colonialisme : le racisme dans le noyau de l'administration. De même, avec la caractérisation des commandants et des administrateurs blancs, qui « rivalisent de cruauté à l'égard des Noirs, »²⁸ Oyono démontre que la maltraitance des Noirs est ancrée dans les institutions du colonialisme français. D'abord, on va examiner le Commandant, celui qui, selon l'universitaire Jacques Chevrier, est « le personnage placé à la tête du milieu européen, » le plus « puissant et intouchable » de la société.²⁹ A cet égard, le Commandant est un microcosme du gouvernement français au Cameroun, ou un « symbole de l'arbitraire coloniale, »³⁰ et par conséquent, il représente la grosse maltraitance du colonialisme français. Le comportement grossier du Commandant est entièrement entendu par son pseudonyme, « Zeuil-de-Panthère, »³¹ ce qui « signifie... la menace se lit dans son regard »³² et prédit sa nature violente. D'ailleurs, la conduite abusive du Commandant est évidente par ses

²⁷ Ibid, 26.

²⁸ Garvais Mendo Zé. *Ecce Homo : Ferdinand Léopold Oyono : Hommage à un classique africain* (Paris : Editions Karthala, 2007), 535, Imprimé.

²⁹ Chevrier, 29.

³⁰ Kwabena Britwum, « Colonisateurs et colonisés : une lecture politico-historique d'« Une vie de boy » de Ferdinand Oyono. » *JSTOR. Africa : Rivista Trimestrale di Studi e Documentazione dell'Istituto Italo-Africano*, 6 jan. 1983, Web, 13 juil. 2017.

³¹ Oyono, 40.

³² Susanne Gehrmann et János Riez, *Le Blanc du Noir : représentations de l'Europe et des Européens dans les littératures africaines* (Munster : Lit Verlag, 2004), 153, Imprimé.



interactions avec Toundi. Par exemple, quand le Commandant fait la connaissance de Toundi, il examine sa santé avec « l'attitude d'un maquignon examinant un cheval à la foire, »³³ en disant « [Toundi] n'as pas de chiques...il n'as pas de gale... »³⁴ Oyono utilise cette déshumanisation des serviteurs noirs pour attirer l'attention sur la maltraitance et la dégradation que les Noirs ont subi, particulièrement sous des administrateurs. Dans un autre cas, quand la casquette de Toundi tombe près du pied du Commandant, le Commandant « le décoche un coup de pied...plus brûlant que celui de regretté père Gilbert, » en apparaissant « très content de sa performance. »³⁵ En plus de la révélation que le Père frappait Toundi comme le Commandant fait, on remarque que la manière dans laquelle le Commandant traite Toundi est si cruelle, si sévère, voire malveillante envers un serviteur. C'est-à-dire, « entre ses maîtres blancs et Toundi se dessinent les rapports de maître à esclave, »³⁶ pas les rapports de maître à boy. Comme Chevrier s'aperçoit, en somme, le Commandant « ne conçoit les rapports avec ses subalternes noirs que sous la forme d'injures ou de coups, »³⁷ et puisqu'il représente le gouvernement français, cela nuit à l'apparence de la colonie.

Après le Commandant, l'administrateur qui inflige la plus grande maltraitance aux Noirs est celui qui s'appelle Monsieur Moreau, le régisseur de la prison à Dangan et l'amant de Madame Decazy, la femme du Commandant. Son traitement horrifique des prisonniers noirs illustre son caractère agressif et intimidant. Par exemple, quand Toundi visite la prison pour donner à M. Moreau une note de Madame Decazy, il voit que M. Moreau est en train « d'apprendre à vivre » à deux nègres, « soupçonnés d'avoir volé. »³⁸ Pour cela, M. Moreau fouette sévèrement les

³³ Chevrier, 29.

³⁴ Oyono, 35.

³⁵ Ibid, 37.

³⁶ Britwum.

³⁷ Chevrier, 29.

³⁸ Oyono, 114.



nègres, qui sont « nus jusqu'à la ceinture » et « attachés sur le poteau de la 'Place de la bastonnade' » par une corde.³⁹ Toundi regarde, muet d'horreur, pendant que « le nerf d'hippopotame laboure leur chair. »⁴⁰ Ces actions exposent la cruauté de M. Moreau, particulièrement pour un crime insignifiant et supposé, et révèlent l'oppression horridique à laquelle les Noirs étaient soumis par le système de prison. Pourtant, l'horreur continue ; peu après, en exigeant que les nègres y succombent, M. Moreau exige un coup de crosse de Ndjangoula, un garde, mais « sur les reins » pas « sur la tête » parce qu'ils- les Noirs- « ont la tête dure. »⁴¹ Outre le racisme des remarques de M. Moreau, ses actions frisent la torture. Cependant, les Noirs, restreints par l'oppression de l'administration, n'ont pas la puissance de réfuter les institutions de la société et ainsi ne peuvent pas protester leur traitement.

Le troisième administrateur, celui qui s'appelle Gosier d'Oiseau, est le commissaire à Dangan et il semble exister seulement pour inspirer la crainte aux Noirs. Ses rafles nocturnes sont brutales, injustifiées, et racistes, en apparaissant d'une façon disproportionnée dans le quartier africain. En fait, dans une de ses descentes arbitraires, il détruit la maison de Toundi, déçu et furieux de n'avoir attrapé personne.⁴² Sans doute, le but de ces descentes est d'instiller la peur dans les Noirs. Pire encore, les Noirs ne possèdent pas le droit de protester contre cette oppression parce qu'ils sont considérés inhumains. Évidemment mais malheureusement, il n'y a pas de justice pour les Noirs.

³⁹ Ibid.

⁴⁰ Ibid.

⁴¹ Ibid, 114-115.

⁴² Ibid, 38.



Les Prêtres

Puisqu'on parle de l'oppression qui est ancrée dans les institutions de la société, on doit examiner l'utilisation de la religion comme une forme d'oppression. Cependant, selon le Camerounais Thomas Malone, « ce n'est pas le Dieu des Chrétiens qui est remis en cause » ; ce sont « les ministres du culte catholique qu'on ridiculise. »⁴³ En effet, dans le roman, l'oppression est un résultat de « la collusion objective de l'institution chrétienne et de l'administration à l'époque coloniale. »⁴⁴ En fait, Oyono exprime que la religion est un mode d'opprimer les Noirs et de les encourager de rester à leur niveau de vie. Cette oppression est exemplifiée par le père Vandermayer, qui est l'adjoint du père Gilbert et « le censeur des boys et des fidèles de la paroisse. »⁴⁵ Ironiquement, le père Vandermayer se caractérise comme « un personnage avare, violent et sexuellement obsédé. »⁴⁶ Par exemple, Oyono écrit que le père Vandermayer « a la manie de battre les chrétiennes adultères, les indigènes bien sur... »⁴⁷ Le père « les fait mettre nues dans son bureau, tout en répétant dans un mauvais Ndjem : 'Quand tu as baisé, as-tu eu honte devant Dieu ?' »⁴⁸ Puisque quand on pense à la religion, on estime une institution qui promulgue la paix et l'indulgence, c'est ironique que les prêtres pratiquent la cruauté et la violence. Evidemment, du point de vue des Blancs, « toute occasion est bonne pour brutaliser le Noir. »⁴⁹ On note d'ailleurs que ce traitement est seulement réservé pour les Camerounais, pas pour les Blancs, en soulignant la discrimination que sont soumis les Noirs.

⁴³ Chevrier, 35.

⁴⁴ Ibid.

⁴⁵ Oyono, 25.

⁴⁶ Chevrier, 34.

⁴⁷ Oyono, 25.

⁴⁸ Ibid.

⁴⁹ Nwabueze Joe Obinaju, « 'Quête' et 'initiation' dans Une vie de boy, » *Neohelicon*, 1 sept. 1995, Web, 10 juil. 2017.



En plus, Oyono démontre que les Blancs utilisent la religion pour forcer les Noirs de rester inférieurs. Dans le roman, les Blancs ne s'attendent pas seulement à ce que les Noirs les servent, mais en plus que les Noirs sont contents avec leur traitement. Par exemple, dans une discussion avec Madame Decazy, quand Toundi exprime son but de manger et d'habiller « comme les petits Blancs, »⁵⁰ Madame s'exclame qu'il « a la folie des grandeurs. »⁵¹ Elle continue, « la sagesse recommande à chacun de garder sa place, » en demandant à Toundi, « Tu es chrétien, n'est-ce pas ? »⁵² Madame Decazy utilise la religion ici pour encourager la présupposition idéologique que Toundi devrait rester à sa place et ne pas en douter, car sa place « est pas seulement inévitable, immuable, mais en quelque sorte naturelle. » Car, il est impossible qu'un Noir obtienne un statut plus important qu'un Blanc et l'église encourage ce statut. En somme, outre le gouvernement de la colonie française, la religion, spécifiquement le christianisme, est une autre forme d'oppression institutionnelle.

L'Hypocrisie

La Religion

Enfin, on analyse l'objectif de l'hypocrisie, ou la moralité fausse, de la colonie française pour dénoter l'inégalité qui se manifestait dans chaque facette du colonialisme. Car, comme on a noté auparavant, dans n'importe quelle colonie, le colonisateur doit justifier ses actions discriminatoires et avilissants devant les Noirs, en « apportant à défendre le système colonial plus de vigueur qu'il n'en aurait fallu pour le refuser. »⁵³ En effet, dès que le colonisateur se rend compte de l'inégalité qui le sépare des colonisés, « il lui faut sans répit s'appliquer à

⁵⁰ Oyono, 88.

⁵¹ Ibid.

⁵² Ibid.

⁵³ Memmi, 84.



s'absoudre, » en faisant « éclater publiquement ses propres vertus » et en plaidant « avec une rageuse obstination pour paraître héroïque, grand et méritant largement sa fortune. »⁵⁴

Précisément, c'est cette mentalité du colonisateur qui incite l'hypocrisie des Blancs dans le roman : le désir de cimenter la hiérarchie raciale entre des Blancs et des Noirs. Outre son rôle dans l'oppression administrative, la religion, fondamentalement compris des principes moraux, est le fond de l'hypocrisie au Cameroun. Par exemple, dans le roman, chaque samedi « tous les Blancs de Dangan ont l'habitude de s'amuser au Cercle Européen, »⁵⁵ un point de rendez-vous pour boire de l'alcool et parier, mais ironiquement, le lendemain, ces Blancs « qui s'amuse au Cercle...semblent de s'être donné rendez-vous à ce quartier de Dieu. »⁵⁶ Paradoxalement, les Blancs, qui réprimandent d'habitude les Noirs pour leurs mœurs inférieures et sauvages, n'hésitent pas à pratiquer les actions scandaleuses et déshonorantes. En plus, la conduite des Blancs dans l'église continue à exemplifier le double poids double mesure ancré dans cette société. En effet, dans l'église, tandis que les Noirs sont sévis « brutalement à la moindre inattention, le moindre clin d'œil, » les Blancs, séparés des Camerounais, flirtent facilement dans ce lieu sacré.⁵⁷ Encore, les mêmes Blancs, qui s'enorgueillissent de leur moralité supérieure, pratiquent les principes immoraux et honteux. Bref, cette scène démontre la juxtaposition entre le traitement des Blancs, qui sont glorifiés malgré leur immoralité, par rapport au traitement des Noirs, qui sont battus injustement, tout en affirmant le double poids double mesure.

De plus, avec l'ironie de la religion, Oyono exprime un message plus bouleversant que l'hypocrisie : le mépris flagrant pour la vie des Noirs, soutenu par les administrateurs chrétiens à Dangan. Par exemple, on note que même les prêtres qui promeuvent l'amour des prochains, ne

⁵⁴ Ibid.

⁵⁵ Oyono, 41.

⁵⁶ Ibid, 52.

⁵⁷ Ibid, 54.



font rien pour assurer l'égalité des Noirs. Un témoin de la barrière entre Blanc et Noir, Toundi se demande désespérément, « Le prochain du Blanc n'est-il que son congénère ? »⁵⁸ Evidemment, Toundi questionne le noyau de l'hypocrisie de la religion dans cette société, celle qui souligne la signification de la paix et de l'amour mais justifie le traitement inégal et injuste envers les Noirs.

L'Amour

Un autre aspect de l'hypocrisie de la part de la colonie française existe dans les relations amoureuses des citoyens de Dangan, particulièrement la liaison entre Madame Decazy et M. Moreau et la relation entre l'ingénieur agricole et Sophie. D'abord, la relation qui expose l'immoralité le plus est celle entre la femme du Commandant et son amant. Outre la pudeur associée normalement avec des liaisons sexuelles, plus surprenant est l'indifférence flagrante de Madame quand Toundi découvre sa relation avec le régisseur de prison. Comme le note Baklu, le blanchisseur du Commandant, après avoir nettoyé les sous-vêtements de Madame et avoir balayé les préservatifs de Madame et M. Moreau, « Il y a deux mondes... le nôtre est fait de respect, de mystère... Le leur laisse tout en plein jour, même ce qui n'a pas été prévu pour ça... »⁵⁹ Du point de vue des Noirs, contrairement à la perspective des Blancs, le monde des Noirs, avec des mœurs qui enseignent le respect et la modestie, est plus vertueux que le monde des Blancs, avec des mœurs irrévérencieuses. Cela illustre une autre forme d'hypocrisie : la demande importune que les Noirs se conforment aux valeurs et aux préceptes des Blancs, qui sont à l'évidence indécente, et abandonnent entièrement leurs principes culturels. D'ailleurs, cette exigence révèle le cœur du problème de la politique d'assimilation. Les Blancs s'attendent à ce que les Noirs assimilent à la culture française de bon cœur, en méprisant la culture camerounaise ; par contre, avec sa

⁵⁸ Ibid, 115.

⁵⁹ Ibid, 123.



représentation du comportement malséant des Blancs, Oyono exprime l'hypocrisie de ces attentes et ainsi critique la politique.

La deuxième relation qu'on analyse est celle entre l'ingénieur agricole et Sophie, qui fait semblant d'être sa cuisinière. Exaspérée avec son amant incirconcis « un signe d'immaturité »⁶⁰ en Afrique, Sophie se plaint souvent à Toundi du refus de l'ingénieur d'admettre à leur relation, en s'en moquant, « 'Sophie, quand tu me vois avec une madame, ne me regarde pas, ne me salue pas.' »⁶¹ On continue à compatir avec Sophie plus tard quand elle demande éperdument, « Qu'est-ce qu'elles ont...Qu'est-ce qu'elles ont de plus que moi ? »⁶² en faisant référence aux femmes blanches. Forcément, la honte de l'ingénieur révèle le dédain associé aux relations interraciales et affirme l'hypocrisie des Blancs, qui se croient plus purs et vertueux que les Noirs, mais s'impliquent tout de même dans les relations avec eux. Encore, Oyono confirme l'étendue de l'hypocrisie et la discrimination qui séparent les deux races, en doutant de la moralité présumée supérieure des Blancs.

La Conclusion

Sans doute, *Une Vie de Boy* est un témoignage de la discrimination, de l'oppression et de l'hypocrisie qui persistaient au Cameroun malgré la croyance que l'assimilation unirait les Africains et les Français. Car, l'assimilation exige forcément la dénonciation complète de la culture originale des colonisés comme si cette culture est inférieure. De plus, bien que ces aspects horribles du colonialisme aient existé dans le temps, cette découverte a des conséquences contemporaines. Par exemple, au début du roman, Toundi, sanglant de ses blessures, supplie désespérément, « Mon frère... que sommes-nous ? Que sont tous les nègres

⁶⁰ Chevrier, 49.

⁶¹ Oyono, 42-43.

⁶² Ibid, 59.



qu'on dit 'français' » ?⁶³ Cette question résonne à travers le roman, exprimant pas seulement l'envie des Camerounais d'être considérés Français, mais encore plus le désir et les obstacles de tous les Africains qui sont étrangers à la culture de leurs ancêtres et de leurs colonisateurs. Ainsi, ce mémoire modifie la question originale et présente une nouvelle question à examiner : Dans quelle mesure est-ce que les thèmes et les personnages dans *Une Vie de Boy* reflètent la discrimination, l'oppression et l'hypocrisie *subies par les Africains encore aujourd'hui en France ?*

⁶³ Ibid, 12.



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A STUDY INTO THE IMPACT OF INCREASING HUMAN ACTIVITIES IN HONG KONG ON THE LOCAL BIRD POPULATIONS



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1 Glossary.

AFCD	Agriculture and Forestry department Hong Kong
CSD	Census and Statistics Department
DBWP	Deep Bay Wetland Park
DOI	Digital Object Identifier System
HKBWS	Hong Kong Bird Watching Society
HKGOV	Hong Kong Government
HKSAR	Hong Kong Special Administrative Region
MTR	Mass Transit Railway
RAMSAR	Intergovernmental treaty that provides the framework for the conservation and wise use of wetlands and their resources.
SARS	Severe acute respiratory syndrome
PCC	Pearson rank of correlation
MPRS	Mai Po RAMSAR Site



2 Introduction

In recent years the human impact on nature has become a more popular subject in society. Studies have been conducted on the anthropogenic activities and their effects on different species in ecosystems.

Bird populations may be an indicator for environmental change (Morrison, 1986), and may even be indicators for climate change, particularly for migratory bird species. (NIOO. n.d.).

Especially in sensitive habitats such as wetlands, the effect of urban development on bird populations may be high. Bjerstedt (2011), analysed how the speed of urban land development in the state of Louisiana impacts the surrounding wetlands and their natural habitats.

Urban development impacts the bird population indirectly through a set of specific environmental factors and ecological effects. Examples for this are “increases of non-native species of birds”, “increases in birds able to nest on buildings” and “decreases of ground-nesting species”. Bird declines were associated with “decreased habitat size”, “reduced patch size” and “increased nest predation” (Marzluff, 2001)

Based on these articles, inspiration was drawn to analyse the correlation between human activity and their effects on bird populations in the metropolitan area of Hong Kong SAR/Shenzhen.

Hong Kong is a city that has seen a significant amount of development over the past 50 years going from a population of 4 million in 1970 to a population of 7.4 million in 2017, which is an 85% increase in population that has undoubtedly put pressure on the environment in different ways. (The World Bank. n.d.)

For this study, the Hong Kong Deep Bay Wetland Park has been chosen, because it represents one of the most ecologically diverse areas in Hong Kong, encircled by densely urbanized areas within the Yuen Long District.

The Yuen Long district is located in the Northwest of Hong Kong (see map *figure 4*). It has seen a major increase in human population in the past 20 years. The district is made up of 138 km², of which today approx. 20 km² is composed of wetland-linked areas which are the basis for this study and are defined as the DBWP (see map *figure 9*).

However, the center of the DBWP area is protected under the RAMSAR convention and also named as “*Mai Po RAMSAR Site*”, which covers 1540 hectares (AFCD, 2006). The RAMSAR convention is an



"intergovernmental treaty that provides the framework for national action and international cooperation for the conservation and wise use of wetlands and their resources." (RAMSAR, 2014). This treaty restricts any type of construction and access to the land, among others.

The Deep Bay Wetland area in Yuen long provides a safe habitat for both migratory and resident bird species to thrive and breed and was intended as a buffer zone between the two cities of Hong Kong and Shenzhen.



2.1 Aims and Scope of this Essay

Generally, the habitats of humans and birds have overlaps, which may be characterized as interferences. These overlaps and interferences may have profound consequences on wildlife populations, particularly in densely populated urban areas like Hong Kong.

In particular, bird populations depend on several environmental factors which may be critically disturbed through human interferences. It seems obvious that (1) the number of people puts pressure on the birds' habitat, and (2) the close proximity between bird and humans may create negative effects.

The increase in human population size in a region impacts the environment through a multifactorial set of various urban stresses such as urban heat island, noise pollution, soil degradation, waste/sewage discharge and air/water pollution. For instance, in relation to the factor water, the expected size of human population may impact bird populations by increased amount of sewage discharge which has the potential of poisoning the birds via heavy metals and hormones. As no previous studies have been conducted on these variables no specific data is available for the DBWP. Therefore it must be assumed that all the previously mentioned variables are inversely correlated to bird population size.

On the other hand, **urban sprawl** in this context is the area of wetland lost annually to human land use. If wetland is lost to urban sprawl then it is indicative of competition for habitat. The proximity between bird and human may create disturbances of behavioral patterns of bird populations, particularly during mating, breeding, raising and feeding. Even for migratory birds, disturbances of behavioral patterns may occur, particularly during feeding.

Interferences between bird and human in this case may be avoided both (a) by creating a wetland protection zones of a critical minimum size, and (b) by the establishment of core zones within nature parks, from which visitors are completely excluded in order to avoid any disturbances of behavioral patterns.

The two variables 'human population growth' and 'urban sprawl' will hence be classified as **"human activities"**. They represent the scope of this essay.

In this context, this Extended Essay is limited to the populations of 'Little Egret', 'Little Grebe' and 'Great Crested Grebe' in the Deep Bay Wetland area.



Based on these assumptions, the following research question is formed:

Research question:

Has the increase in human population size and urban area in the Hong Kong's Yuen Long district since 2003 had an impact on the of Little Egret, Little Grebe and Great Crested Grebe populations in the Deep Bay Wetland area?



3 Methodology

3.1 Human Population Statistics

The data for the human population published on the CSD/HKSAR website was incomplete in the years 2007-2009 and subsequently inappropriate for the investigation. Therefore the original census data were acquired with the assistance of Mrs LUK CHEUNG Mee-Ying (Senior Statistical Officer, CSD/HKSAR) via E-mail. The received data included the mid-year human population sizes of the Yuen Long district from years 2003-2013, which were highly accurate.

3.2 Choice of Bird Varieties

In this study, 3 different bird varieties were chosen to represent typical bird populations in the DBWP area with their characteristic movement patterns (see *figure 1*).

As all bird species are migratory, extraneous variables could be in play. By selecting a range of 3 different bird species, differences between their migration patterns can neutralize each other's population fluctuations. More so, the inclusion of multiple bird species in the investigation also enables the testing for inter species competition within the DBWP.

To select a wide range of different migration patterns, the varieties of '*Little Egret*' and '*Little Grebe*' were chosen as being partially migratory, while '*Great Crested Grebe*' is a fully migratory species. All of them reside year-round in wetland conditions, require similar diets, breeding conditions, habitat space, and have similar behavioural patterns. (IUCN, 2011) (PAR, H. 2005)

Figure 1: Bird species and simple description of yearly movement patterns.

English name	Scientific name	Characteristical movement pattern
Little Grebe	<i>Tachybaptus ruficollis</i>	"locally dispersive or fully migratory depending on the winter temperatures of its breeding grounds"(del Hoyo <i>et al.</i> 1992)
Great crested Grebe	<i>Podiceps cristatus</i>	"The majority of this species is fully migratory although some populations may only undergo local dispersive movements" (del Hoyo <i>et al.</i> 1992).
Little Egret	<i>Egretta garzetta</i>	"All populations of this species undergo post-breeding dispersive movements" (del Hoyo <i>et al.</i> 1992)



As shown in figure 2, the population size of 'Little Egret' is higher compared to 'Little Grebe' and 'Great Crested Grebe' which is linked to the relative dominance of the 'Egret' species, which occasionally breeds in the Hong Kong wetlands.

3.3 Bird population statistics

The used statistics from 2003-2013 are based on monthly countings by the HKBWS in the DBWP area, which are taken at their feeding grounds. The portrayal of published data changed from a monthly count (2003-2008) to a yearly high count (2009-2013). Therefore in this study, all 11 years were described as high counts, representing the highest population count throughout each respective year (see figure 2).

This change creates a major limitation to the analyzability and comparability of the results because the point in time within a year with the highest count may vary from year to year.

Figure 2: Differences in the results portrayal of the 2003 and 2013 (here: countings of Little Grebe).

Year	Counting Methods	Comments																										
2003	<p>002A Little Grebe <i>Tachybaptus ruficollis</i> 小鵝</p> <p>2003: The highest count in the first half of the year was 164 in the February waterbird count, while the highest in the second half was 182 in the November count. Breeding was confirmed at Mai Po, Tsim Bei Tsui and Lok Ma Chau, where chicks were seen. Monthly waterbird counts were as follows:</p> <table><tr><th></th><th>J</th><th>F</th><th>M</th><th>A</th><th>M</th><th>J</th><th>J</th><th>A</th><th>S</th><th>O</th><th>N</th><th>D</th></tr><tr><td>DB</td><td>154</td><td>164</td><td>163</td><td>77</td><td>68</td><td>68</td><td>92</td><td>99</td><td>104</td><td>99</td><td>182</td><td>153</td></tr></table>		J	F	M	A	M	J	J	A	S	O	N	D	DB	154	164	163	77	68	68	92	99	104	99	182	153	<p><u>Applied counting method:</u></p> <p>Counting highlights monthly survey findings.</p> <p>(This counting method is used throughout the 2003-2008 studies).</p> <p>* DB refers To the Deep Bay research area</p>
	J	F	M	A	M	J	J	A	S	O	N	D																
DB	154	164	163	77	68	68	92	99	104	99	182	153																
2013	<p>Little Grebe <i>Tachybaptus ruficollis</i> 小鵝 I</p> <p>Common all year with higher numbers in winter, on ponds and pools primarily in Deep Bay wetland areas; highest count 352 on 12 January 1986.</p> <p>全年常見的鳥，在冬季時數量最多，主要出沒於西貢灣濕地內的池塘和水池，最高紀錄為1986年1月12日的352隻。</p> <p>This species has been gradually increasing in numbers since <i>The Avifauna</i>.</p> <p>Recorded throughout the year in the Deep Bay WC with a peak count of 260 in the February WC, the second highest of recent records. Regular records at MPNR, where the high count was 46 on 9 April, and at Nim Wan, where the high count was 72 on 5 September. Breeding occurred in both places. Elsewhere records at Pak Nai (high count 18), Wetland Park, Kam Tin, Long Valley, Ma Tau Lung (high count 14), Starling Inlet, Ho Pui Reservoir, Lau Shui Heng, Hok Tau Reservoir, Shing Mun, the Hamtin River estuary and Tai O on Lantau.</p> <p>Peak counts in recent years:</p> <table><tr><th>2002</th><th>2003</th><th>2004</th><th>2005</th><th>2006</th><th>2007</th><th>2008</th><th>2009</th><th>2010</th><th>2011</th><th>2012</th><th>2013</th></tr><tr><td>155</td><td>182</td><td>204</td><td>255</td><td>225</td><td>221</td><td>224</td><td>210</td><td>276</td><td>236</td><td>223</td><td>260</td></tr></table>	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	155	182	204	255	225	221	224	210	276	236	223	260	<p><u>Applied counting method:</u></p> <p>Counting only portrays the yearly high counts of the past 11 years (at time of study).</p> <p>(This counting method is used since 2009 and continued until 2013)</p>		
2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013																	
155	182	204	255	225	221	224	210	276	236	223	260																	



Sources: 2003 HKBWS Bird report (Lockey, H. (2009)), 2013 HKBWS Bird report (Allcock, J. (Ed.). (2015),

Screenshots taken through the software application "Snipping tool" (Microsoft Corp.)

Method to Measure Wetland Area Loss

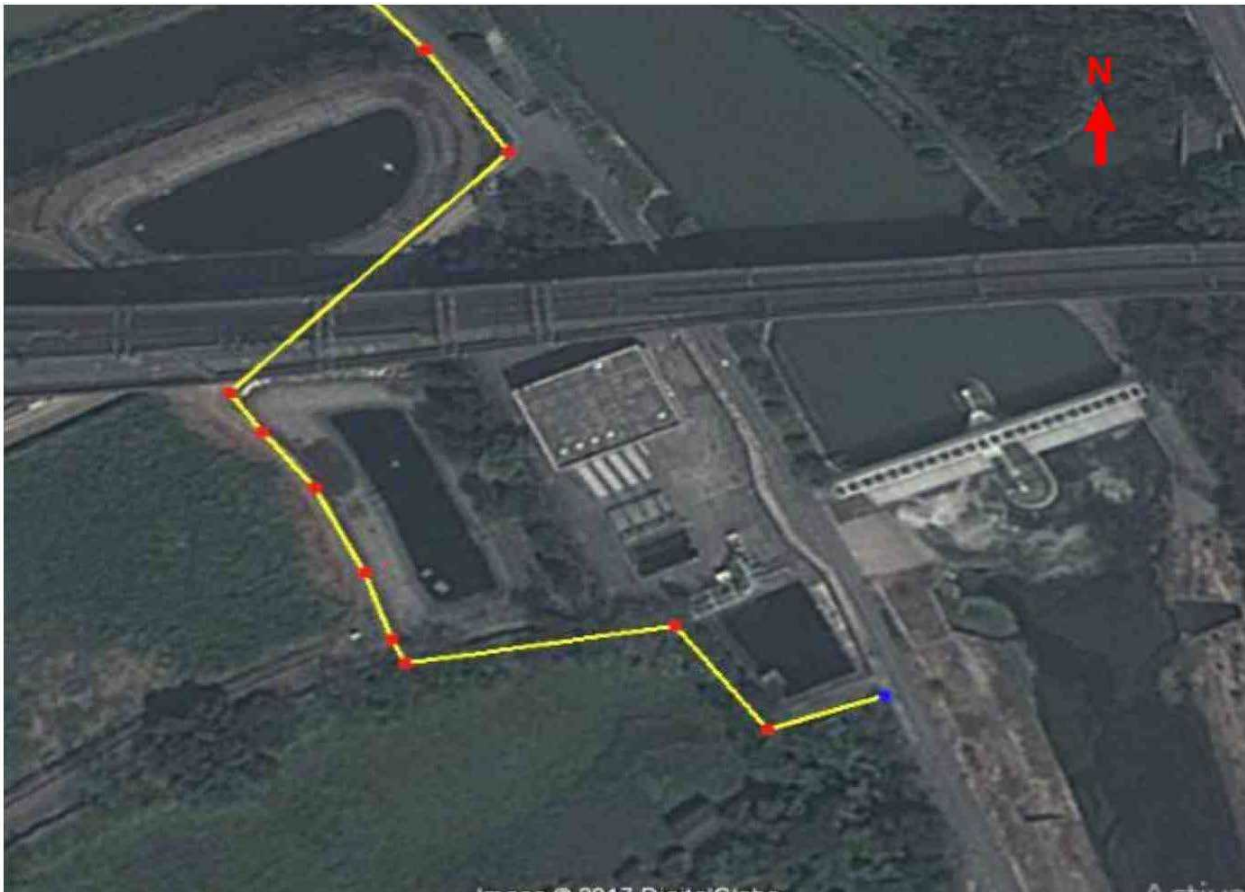
3.4

The loss of wetland area was measured with the help of Google Earth (Google.Inc 2009), specifically its area measuring tool and its historical chart feature.

Using the mentioned features, the surrounding border around the wetland area was traced to accurately determine the annual area loss. Each map detail has been screened to identify and plot the specific border line that separates the characteristic wetland area from urban structures (eg. roads, houses, construction sites and visitor parks) (see *figure 3*).

A limitation here is that variation in accuracy is high as every repeat will differ. Hence, for the precise measurement, for each of the 11 years (2003-2013) a specific area map was plotted and measured with 3 repetitions, and their average was calculated.

Figure 3: Example of the applied accuracy for the separation of wetland areas from urban structures.



Source: Google Earth (Version 7.1.5.1557) [Computer software]. Retrieved July 13, 2017, from <https://www.google.com/earth/download/gep/agree.html>

4 Human Activities and their Impact on Bird Population

This essay highlights only 2 specific factors of human activities on the bird population, in particular clustered by the following aspects:

- (1) The **human population size** dictates the degree of the interspecific competition between humans and birds for natural resources (eg. water, food, air).
- (2) Especially in urban areas, the scale of **urban sprawl** dictates the minimum size of the habitat that is necessary for the undisturbed mating, nesting, breeding, and feeding behavior of birds. *Migratory species* are mainly disturbed in their feeding behavior and may relocate to more undisturbed locations. In contrast, for *non-migratory species*, its impact may determine their survival rate due to disturbances of feeding and diminish breeding success, because they cannot evade their habitat.

4.1 Influence of an Increasing Human Population

4.1.1 Assumptions and Research Hypothesis

The increase of the human population was observed for the Yuen Long district over a time period of 11 years. (see figure 4).



Figure 4: Investigated area: Yuen Long District (2003-2013), circled red.



Source: Google Earth (Version 7.1.5.1557) [Computer software]. Retrieved July 13, 2017, from <https://www.google.com/earth/download/gep/agree.html>

Within the observed area, the size of human population may negatively correlate to the bird population due to the various stresses caused by the following urban factors:

- **noise pollution** may disturb behavioral patterns of birds during the food search and feeding, mating, nesting and the raising of the offspring. On a long-term noise pollution may cause the birds to abandon nesting sites and migrate to different regions.
- **waste** may increase the population size of natural predators such as crows and rodents, which may feed on eggs of ground-breeding birds.
- **waste water** may contain heavy metals, which infiltrates the ecosystem. In a food chain they accumulate with each trophic level. As studied by Wang, S. L. (2013) the concentrations of heavy metals in the Deep Bay Area have “exceeded the safety limit”. All three investigated water bird varieties feed on shellfish and mollusks at an advanced level of the food chain, which may cause severe accumulation of heavy metals. According to Singh, R. (2011), heavy metals have negative effects on birds, as...



(1) “they accumulate and thereby disrupt function in vital organs and glands such as the heart, brain, kidneys, bone, liver, etc.”

(2) “they reduce the eggshell thickness and may decrease the survival rate of the offspring during the breeding season and impact the overall bird population.”

(3) “they displace the vital nutritional minerals from their original place, thereby, hindering their biological function”

- **Overfishing and other human-induced factors** (pesticides) may significantly diminish the prey of all the investigated bird species which includes shellfish, worms, small fish and marine insects.

Based on these assumptions, the following hypothesis builds the basis for the analysis (Chapter 5.1.2) and the conclusions (Chapter 6):

Hypothesis 1:

If the **human population** increases in the Yuen Long district then the bird population will decrease, illustrating that the human population and the bird population are negatively correlated.

4.1.2 Findings and Results of my Research

In order to test the hypothesis 1, the populations of the 3 different bird varieties have been compared with the development of the human population (see figure 5).

Figure 5: Human population / number of citizens of the Yuen Long District

(Source: Census Department of Hong Kong SAR)

Human population	Yuen Long District population in years 2003-2013 (in thousand citizens)											Increase
	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	from 2003 to 2013
Citizens	514.6	523.0	532.4	529.3	532.8	537.0	542.8	552.5	573.0	583.3	588.1	14.3%
Yearly growth rate vs. previous year		1.63%	1.79%	-0.58%	0.66%	0.78%	1.08%	1.78%	3.71%	1.79%	0.82%	

Over an 11 year period (2003-2013), the average number of residents in the Yuen Long District has been steadily growing by 14.3%, from 514,600 to 588,100 citizens, with different yearly growth rates.



Unexpectedly, in 2006, the population size decreased slightly, which may be linked to the economic crisis in the aftermath of the SARS outbreak in 2002/2003. In contrast, the higher growth rates in the years 2009-2012 indicate the recovery from this crisis.

In the same period, the changes in the bird population fluctuated significantly between the years, measured by the variance coefficient (see *figure 6*). The population size deviated from the mean for 'Little Grebe' by 11%, for 'Little Egret' by 31%, and for 'Great Crested Grebe' by 56%. The fluctuations may be caused by inaccuracies in the counting method, variations in the breeding conditions in the summering regions, and unpredictable losses during migration flights (Wong, 2006 HKWBS).

The PCC, which measures possible correlations between human and bird populations, are positive for 'Little Grebe' (0.53), neutral for 'Great Crested Grebe' (0.02) and negative for 'Little Egret' (-0.76).

Figure 6: Highest monthly bird count per species of Little Egret, Great crested Grebe, and Little Grebe
(collated statistics of HKBWS)

Bird Species	Yearly Highest counts											Mean	Range	ST Dev	Var Coef
	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013				
Little Grebe	182	204	255	225	221	224	210	276	236	223	260	229	94	25.64	11%
Great Crested Grebe	104	213	291	790	375	331	357	215	420	515	104	338	686	187.47	56%
Little Egret	2151	3212	2345	2004	1969	1675	2076	1197	1661	1235	1071	1872	2141	584.03	31%
Human Population	514600	523000	532400	529300	532800	537000	542800	552500	573000	583300	588100	546255	73500	23699.88	4%
Human population correlated to Bird populations:															
Pearsons Correlation Coefficient (PCC)															
Little Grebe	0.53														
Great Crested Grebe	0.02														
Little Egret	-0.76														

These yearly variations are so significant that they may superimpose any possible trend pattern for the 11-year period for the bird population sizes, so a conclusive statement over a long-term increase or decrease may be unreliable.



The higher average population size of 'Little Egret' (1872) compared to 'Little Grebe' (229) and 'Great Crested Grebe' (338) is linked to the relative dominance of the 'Egret' species, which occasionally breeds in the Hong Kong wetlands (Wong, 2006 HKWBS)

In order to visualize the development of bird populations against the development of the human populations, each of the bird populations have been set to a reference value in the year 2003, and plotted against the absolute figures of the increasing human population (see figure 7).

Figure 7: Human population growth: Changes of the annual bird populations

(Reference value 2003=100%)

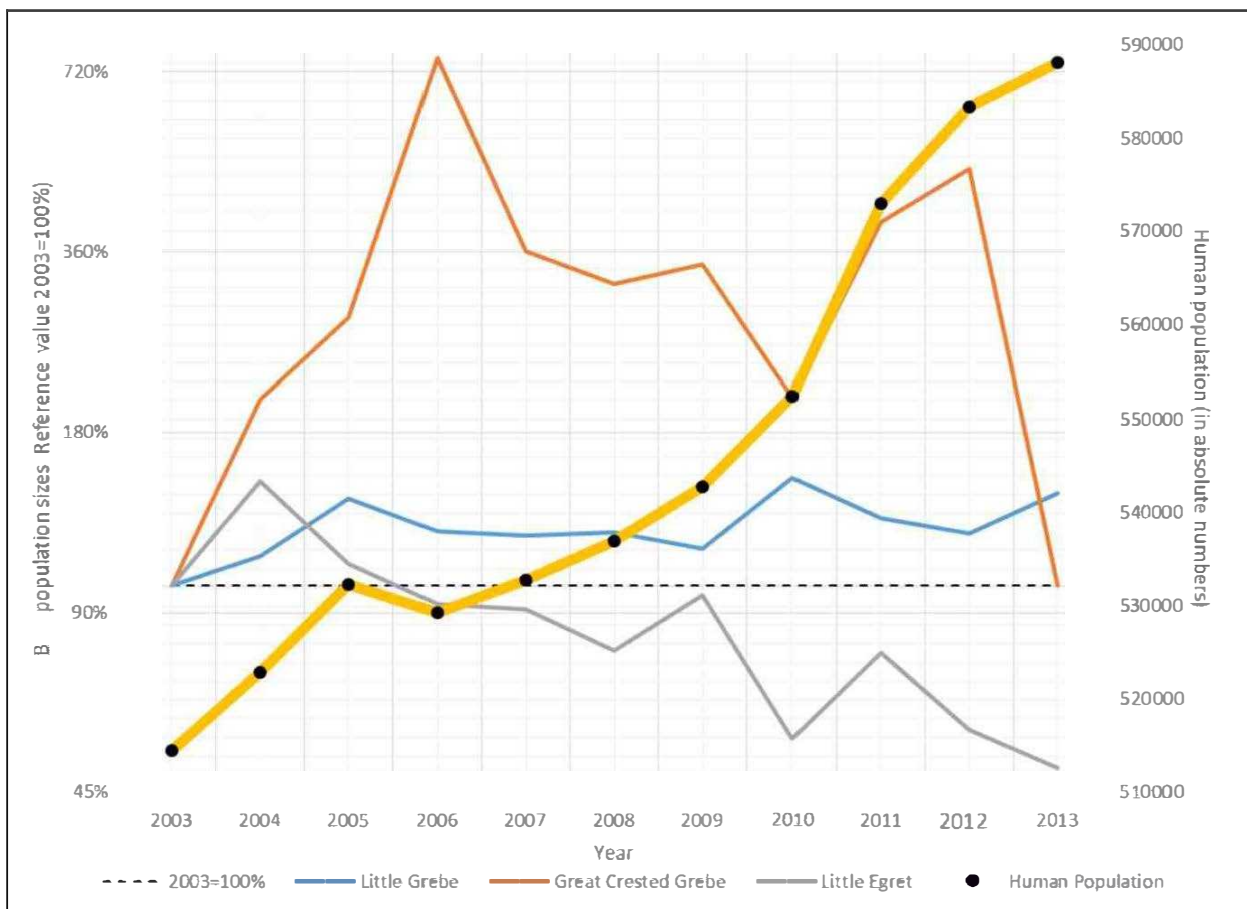
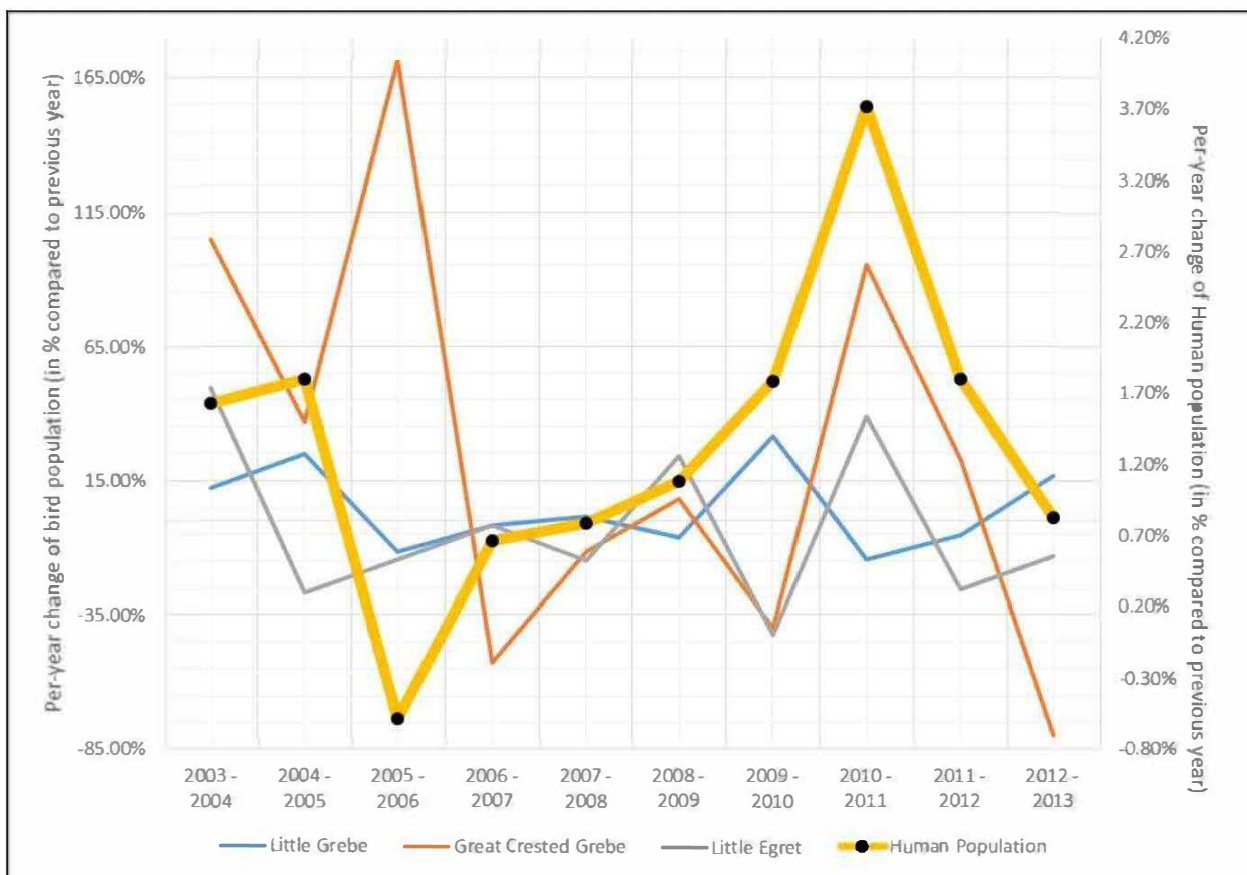


Figure 7 shows that there is a negative correlation between the 'Little Egret' population and the human population. This observation is supported through a PCC calculation seen in figure 6 which shows a -0.76 correlation.

This means that an incline in human population is correlated to the decline in the 'Little Egret' population. On the contrary, the 'Little Grebe' population appears to be positively correlated with the human population size (PCC of 0.53). The 'Great Crested Grebe' population has no correlation to the human population as evident in the PCC score of 0.02 nor does it have a correlation to any other bird species as its population size fluctuates too greatly.

Figure 8: Human population growth: Per-year changes of bird populations – (in % of the previous year)



It becomes evident from figure 8 that 2010 showed an odd incline in human, 'Little Egret' and 'Great Crested Grebe' population. The 'Little Grebe' population however declined in that year.



This is an interesting discovery as it reaffirms the claim made in *figure 7* that the '*Little Grebe*' population declines when the '*Little Egret*' population inclines.

The reason for the odd peak in 2010 could be the El Niño event that occurred in late 2009 (Null, J. 2017).

The El Niño event could have led to increased productivity in the different feeding grounds which would also have increased food available for the birds.



4.2 Influence of Urban Sprawl

4.2.1 Assumptions and Research Hypothesis

Urban sprawl is defined as the development of new urban areas along the edge of an already existent protected area. In the context of this study, the development of urban sprawl can be observed by the shrinking of the DBWP (see figure 9), due to growing residential demand in the vicinity to the Shenzhen border.

Figure 9: DBWP area loss: Investigated area (2003-2013, Google Earth area measuring tool).



Source: Google Earth (Version 7.1.5.1557) [Computer software]. Retrieved July 13, 2017, from <https://www.google.com/earth/download/gep/agree.html>

The DBWP area enclosed in the red zone is exclusively declared as a protective zone, and shrinks over the time of 11 years. A closer look at the observed edges showed construction activities of residential buildings, roads and underground railway, as shown in figure 10.

The size of land loss caused by **urban sprawl** may negatively correlate to the bird population due to the following factors:



- A **sudden loss of habitat area** may lead to temporary overpopulation, which causes stress due to starvation, environmental decline, and transmission of diseases within the existing DBWP bird population. Any decline in habitat area will result directly in changing bird behaviour as feeding, nesting and breeding grounds may have to be relocated. On a **long term** it can be expected that *migratory birds* evade this issue by searching for new habitats, which may also lead to a decrease in the bird population in the DBWP.
- **Permanent changes in ground water flows and aquifer levels** due to underground construction activities may cause a dryfall of wetland. As all three investigated water bird varieties feed on wetland-dependent shellfish and mollusks, this may reduce the wetland's ability to sustain the food chain.
- Similarly, **soil degradation** may reduce the potential to produce feeding plants for other prey, such as spiders, insects, worms and small reptiles. The soil degradation may be caused by soil compaction, and pollution of surface water with synthetic oils disposed during construction activities.
- **Other significant factors** such as *noise pollution, waste, waste water, overfishing* and *other human-induced factors* have already been discussed in the context of an increasing human population (*Chapter 5.1.1*). They are also relevant in the context of urban sprawl, as the pressure of the human population increases with a significant increase of residential and commercial buildings in the proximity of the DBWP.



Figure 10: A snapshot portraying the disinclusion of a deforested construction area as it is not wetland region and therefore not bird habitat.



Source: Google Earth (Version 7.1.5.1557) [Computer software]. Retrieved July 13, 2017, from <https://www.google.com/earth/download/gep/agree.html>

Based on these assumptions, the following hypothesis builds the basis for the analysis (Chapter 5.2.2) and the conclusions (Chapter 6):

Hypothesis 2:

The loss of wetland to **urban sprawl** in the DBWP lead to a decrease of the bird populations, illustrating that the urban sprawl and the bird population are negatively correlated.



4.2.2 Findings and Results of my Research

Based on the plotted, measured and calculated sizes of the DBWP area, the overall land loss has been 2.1% of the original size of 20.44 km², between 2003 and 2013 (see figure 11).

The annual losses have been lower (0.05-0.10%) in the years 2005-2007, which may be related to lower construction activities in the delayed aftermath of the 2002/2003 SARS outbreak (the 2004 peak may indicate the final stage of still ongoing projects).

In contrast, the years 2009, and 2011-2013 the annual wetland losses increased of 0.20% or higher, which may be related to the recovery of the economy, and a MTR railway construction project.

The variations of the bird populations have already been explained in Chapter 5.1.2.

The PCC, which measures possible correlations between wetland loss and bird populations, are positive for 'Little Egret' (0.76), neutral for 'Great Crested Grebe' (0.02) and negative for 'Little Grebe' (-0.56).

Figure 11 : DBWP area loss: Annual counts of bird populations

Land Area (Km ²)	DBWP Area - Annual change vs size of bird populations (area measured in the indicated months via Google Maps)											Decrease			
	2003 (Dec)	2004 (Oct)	2005 (Dec)	2006 (Sept)	2007 (Jan)	2008 (Feb)	2009 (Feb)	2010 (Apr)	2011 (Apr)	2012 (Mar)	2013 (Mar)				
Year															
Area (Km ²)	20.44	20.36	20.35	20.34	20.32	20.29	20.21	20.18	20.13	20.09	20.01	-0.43			
Yearly percentage change of area		-0.39%	-0.05%	-0.05%	-0.10%	-0.15%	-0.39%	-0.15%	-0.25%	-0.20%	-0.40%	-2.10%			
Bird Species	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	Mean	Range	ST Dev	Var Coef
Little Grebe	182	204	255	225	221	224	210	276	236	223	260	229	94	25.64	11%
Great Crested Grebe	104	213	291	790	375	331	357	215	420	515	104	338	686	187.47	56%
Little Egret	2151	3212	2345	2004	1969	1675	2076	1197	1661	1235	1071	1872	2141	584.03	31%
Area change correlated to Bird populations:															
Pearsons Correlation Coefficient (PCC)															
Little Grebe	-0.56														
Great Crested Grebe	0.02														
Little Egret	0.76														



Figure 12 : DBWP area loss: Development of the bird populations (Reference value 2003=100%)

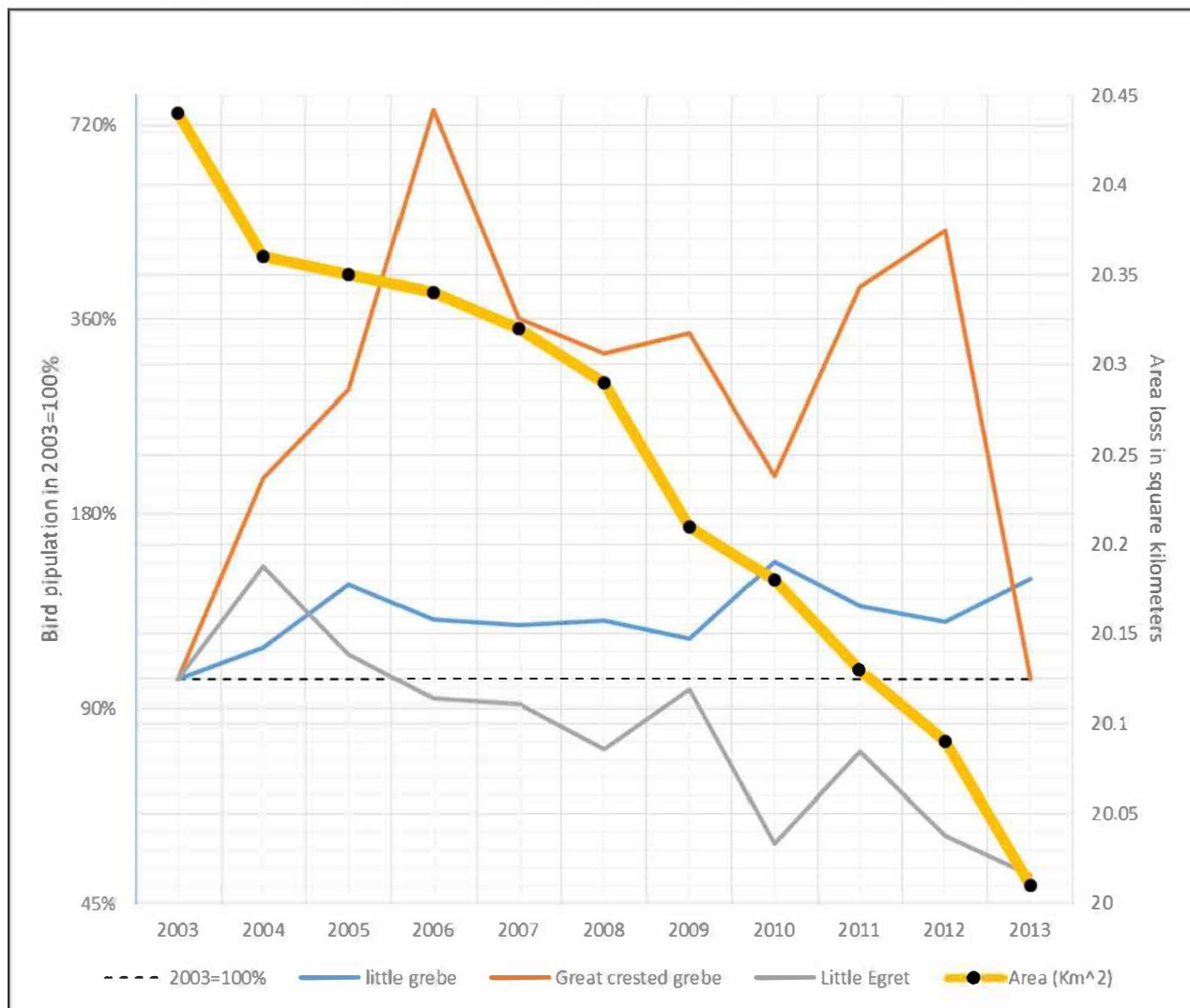


Figure 12 shows that there is a positive correlation between 'Little Egret' population and area of the wetland $PCC=0.76$.

On the contrary, the 'Little Grebe' population is inversely correlated to the DBWP area ($PCC= -0.56$). This can however be attributed to the lack of competition with the 'Little Egret' population which makes up the majority of birds in the park.

Furthermore, it can be observed that there appears to be some degree of correlation between the 'Great Crested Grebe' population and the 'Little Egret' population, this may be because they do not compete for a few resources and therefore coexist to a certain extent.



Figure 13: DBWP area loss: Deviation of the annual bird population from the long-term average
(Average of of the bird populations 2003-2013 = 100%).

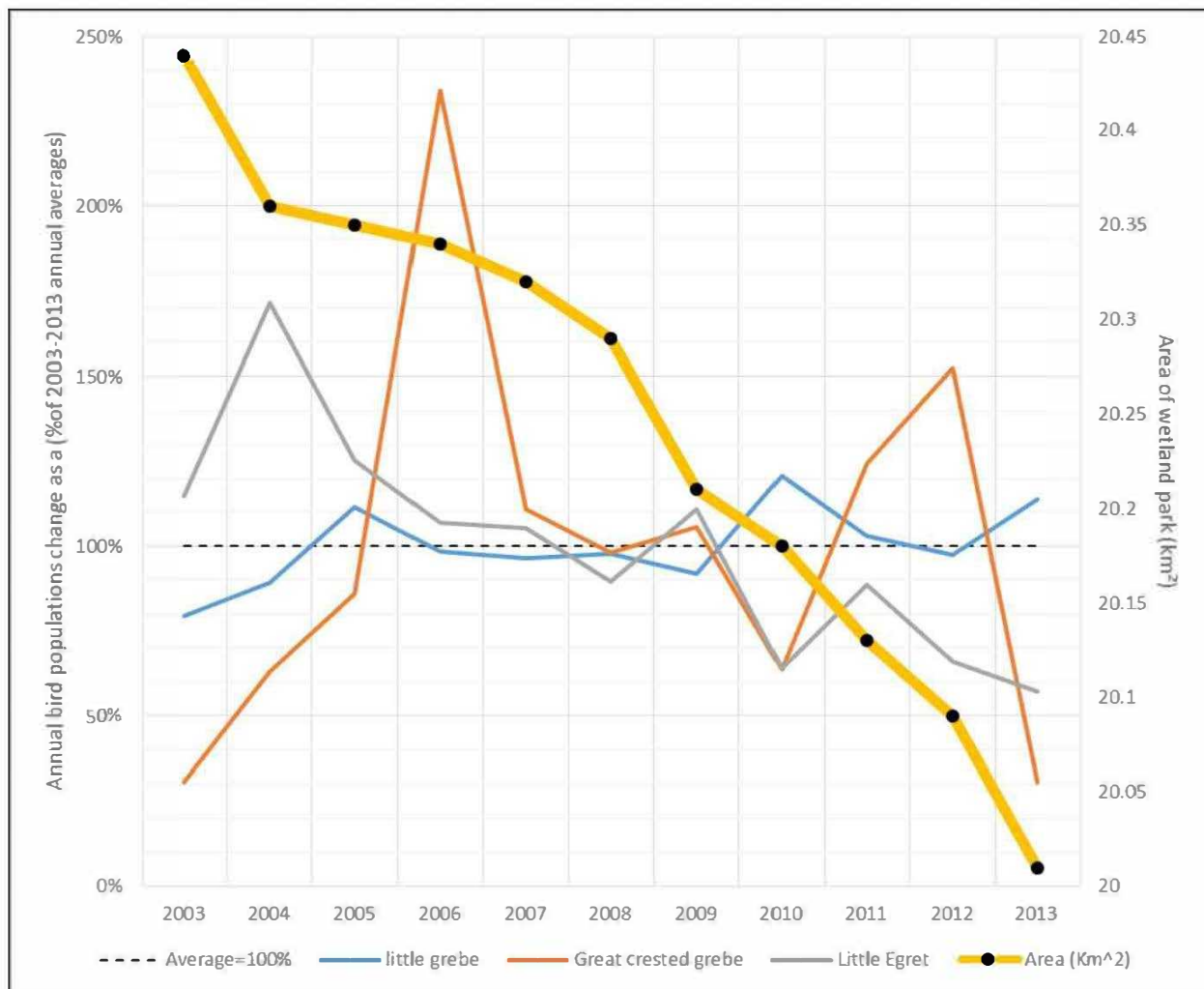


Figure 13 shows very well how the bird population sizes have changed over time in relation to the 11 year average.

It becomes clear here that the 'Little Grebe' population fluctuates slightly over the years but still remains somewhat constant.

The 'Great Crested Grebe' population again shows very little consistency in population size as it fluctuates by unimaginable quantities. This makes it very hard to discuss any correlation as there are simply innumerable extraneous variables.

The 'Little Egret' population on the other hand shows a clear decline in population as time progresses. This decline is clearly due to the human impacts investigated



5 Conclusions

To conclude, the investigated human activities have shown to have an impact on two of the three investigated bird species. These two bird species that have shown correlation to the human activities were '*Little Egret*' and '*Little Grebe*'.

The investigation into the '*Little Egret*' population showed that it declined as the human activities' impacts on the environment increased. As the '*Little Egret*' population is the largest of the three bird populations investigated, it provides the most valid conclusion as population changes are less significant to the overall percentage.

The '*Little Grebe*' population, although small, also shows correlation but it appears to increase as the human impacts also increase. This pattern could be because the '*Little Egret*' population and the '*Little Grebe*' population compete for the limited resources within the DBWP and therefore the '*Little Grebe*' population flourishes as the '*Little Egret*' population suffers.

The '*Great Crested Grebe*' population showed very large fluctuations in size over the years. This makes it very difficult to interpret any conclusion as to human activities and their impacts. However, as a fully migratory bird these fluctuations can be expected as the migration patterns shift throughout the years. Therefore, the results collected for great crested grebe are inconclusive due to their unreliability.

In light of all this evidence, it can be concluded that the two human activities have had, and will continue to have effects on the bird populations of the DBWP.

Furthermore, it becomes apparent in light of this evidence that precautions must be taken to reduce the human impacts on these birds as we should share the environment with the animals rather than drive them out of it.

It is suggested that stricter zoning rules are to be implemented to restrict any ore wetland loss and reduce the impacts of a large human population within the core region of the DBWP. Exclusive core zones should be created to protect birds during critical behavioral patterns, particularly in characteristic mating, nesting, breeding and feeding locations.



6 Reflection and Evaluation

Overall, the investigation was successful in showing that there was in fact a correlation between the human activities and the bird populations.

However, this investigation has its inherent shortcomings which each impact the accuracy of the conclusion in different ways.

One shortcoming is that only three species of birds were investigated in the study. This entails that any findings cannot be applied with a high degree of certainty. The human activities and their impacts on the little egret population can however be used to portray a majority of birds in the DBWP as the species as they are one of the largest bird populations in the park.

Another shortcoming is that the HKBWS studies had their shortcomings regarding their data collection process throughout the years. The HKBWS has alluded to these shortcomings in the published documents. These included distractions when counting bird numbers, increasing sedimentation leading to receding shorelines (more distance to identify birds from watching posts) and times of surveying. The methodology did however become more refined with time to attempt to eliminate these shortcomings and increase counting accuracy over time.

As the chosen bird species were all migratory, there were extraneous variables in play. These variables however, were controlled in the investigation by selecting more than a single bird species to allow for cross comparisons between species.

Finally, the measuring of the wetland area was done by tracing the perimeter of the wetland area on a map. This means that there is a very low degree of accuracy as the scale ratio of a map means that tracing 1mm wrong could already lead to a miscalculation of the area by 1m. Although the tracing of the maps was repeated 3 times for each map. (2003 map traced 3 times and mean taken etc.)

Overall, the reliability of this investigation is preserved because the major shortcomings of this investigation were identified and handled to ensure that the outcomes were as accurate as possible.



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AN ANALYSIS ON THE LEVEL OF SUSTAINABILITY OF MAKONI AND ZENGUEZA 3



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1.0 INTRODUCTION

1.1 Background Information

The aim of this research is to examine the extent to which the sustainability of Makoni and Zengeza 3 differ. Sustainability has been used in many academic areas and debates on how cities and regions should be revitalised, improved and reformed. . ““Urban sustainability’ might imply the vitality of a city as a complex system, the quality of life of its citizens, or the capacity of nature to support its activities.” (The environmentalist 148). Today, different governments’ city planners are using sustainability to correct problems such as congestion, urban sprawl, and rural-urban migration among others.

Sustainability in Geography is defined as the “meeting the needs of the current generation without compromising the ability of the future generation to provide for them” (Cooke and Garret, 2011). Sustainability has become a phenomenon that a lot of people have become interested in. Researchers are moving from one city to city; village to village quantifying the extent to which a particular area can be considered sustainable. Most of these people are mainly interested in the positive effects that come with the sustainability of an area but forget the problems that may arise in their attempt to do so.

Zimbabwe has adapted the food and environmental sustainability goals and is focussing more on the urban sustainability. Initially, the country has three main goals; minimise the use of non-renewable inputs, giving back to the environment just as much as they take from it and acting fairly to all people both now and in the future. This is done in an effort to practice sustainability in the country. It is for this reason that this research seeks to examine the extent to which the government’s objective is being achieved by measuring the extent of sustainability using Makoni and Zengeza 3 as case studies.



1.2 Research Question

This research seeks to answer the question;

“To what extent does the level of sustainability differ between Makoni and Zengeza 3 in Chitungwiza, Harare?”

This question will allow me to explore the varying levels of sustainability in Makoni and Zengeza 3 and possibly find out what factors account for these differences.

1.3 Locational Context

Zimbabwe is a landlocked country located in the Southern part of Africa on coordinates of 20° 0' S and 30° 0 ' E (Figure 1). It shares borders with South Africa to the South, Botswana to the West, Zambia to its North and Mozambique to its East (Bradely, 2017). It is elevated to a height of about 4, 898 feet and it has a population of approximately 16.15million inhabitants (Maps of the world). Chitungwiza is the third largest city in Zimbabwe with an approximated population of 340,360 people, located -18.01 latitude and 31.08 longitudes and is 1435 meters above sea level (geonames.org). The city Chitungwiza is located 26.8km from the capital city, Harare.



Figure 1: Map of Zimbabwe showing the location of Chitungwiza

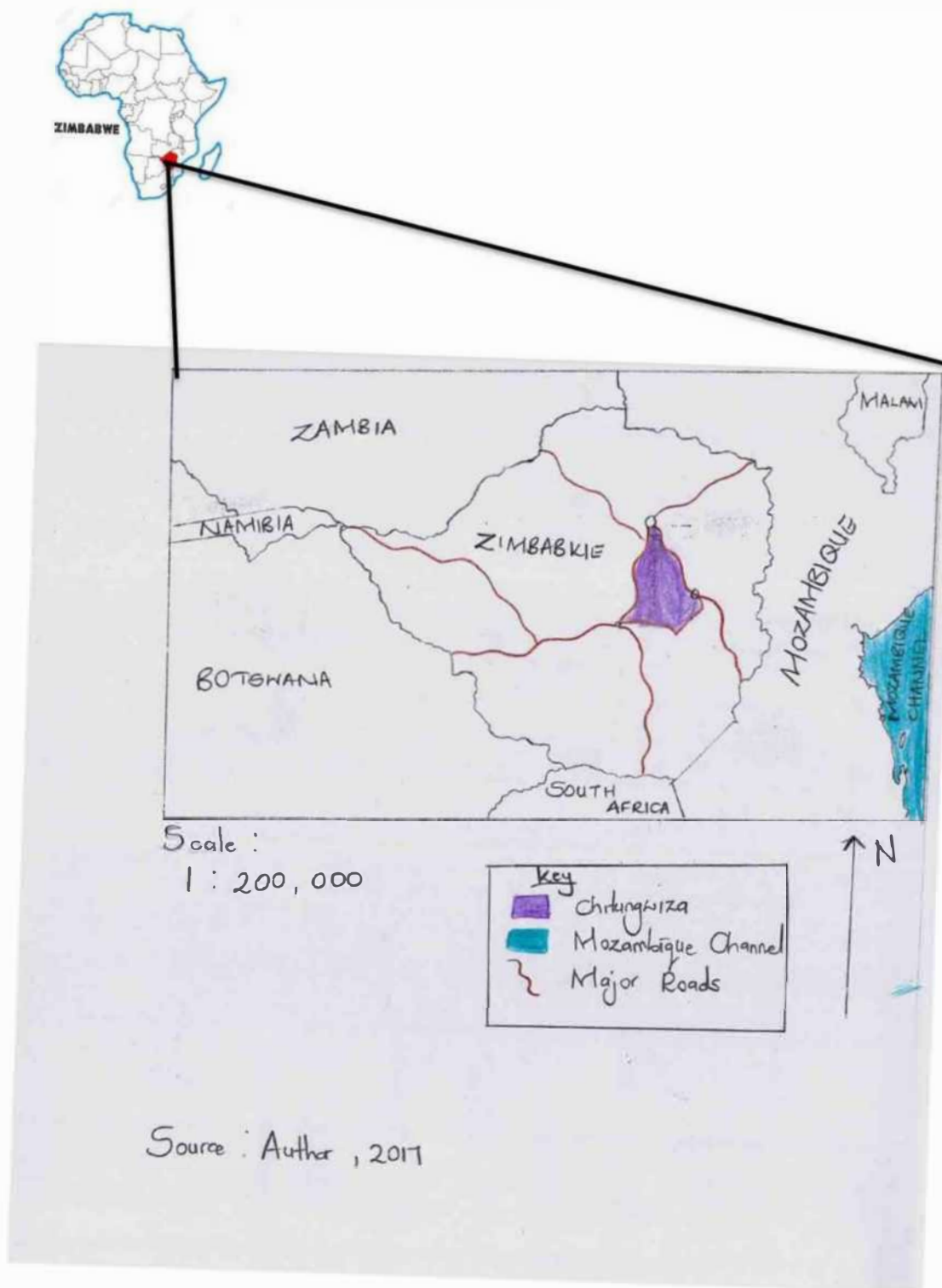


Figure 2: Map Showing Makoni



Source: Author, 2017



KEY

- Major Roads
- Shopping Center
- School
- Bank
- Hospital
- Restaurant

Map Labels:

- From Sele
- From Zogosa 2
- From Zogosa 1
- Figure 1
- Figure 2
- Figure 3
- Figure 4
- Figure 5
- Figure 6
- Figure 7
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7



1.4 Hypothesis

Hypothesis 1: Makoni is a more sustainable community than Zengeza 3.

This investigation assumes this because because Makoni has fewer people than Zengeza 3 and therefore as a community, it demands and uses fewer resources like crude oil than Zengeza 3.

1.5 Significance of Study

This research is of great importance because sustainability has become a phenomenon that a lot of people have become interested in. Countries are practising sustainability to prevent the extinction and over-exploitation of natural resources, find alternative, environmentally friendly ways of living and promote greener economies. (Cohen) This research will also bring into light the different areas that the two communities' municipality or local government of Makoni and Zengeza 3 should work on to make their city a sustainable one.

1.6 Theoretical Model

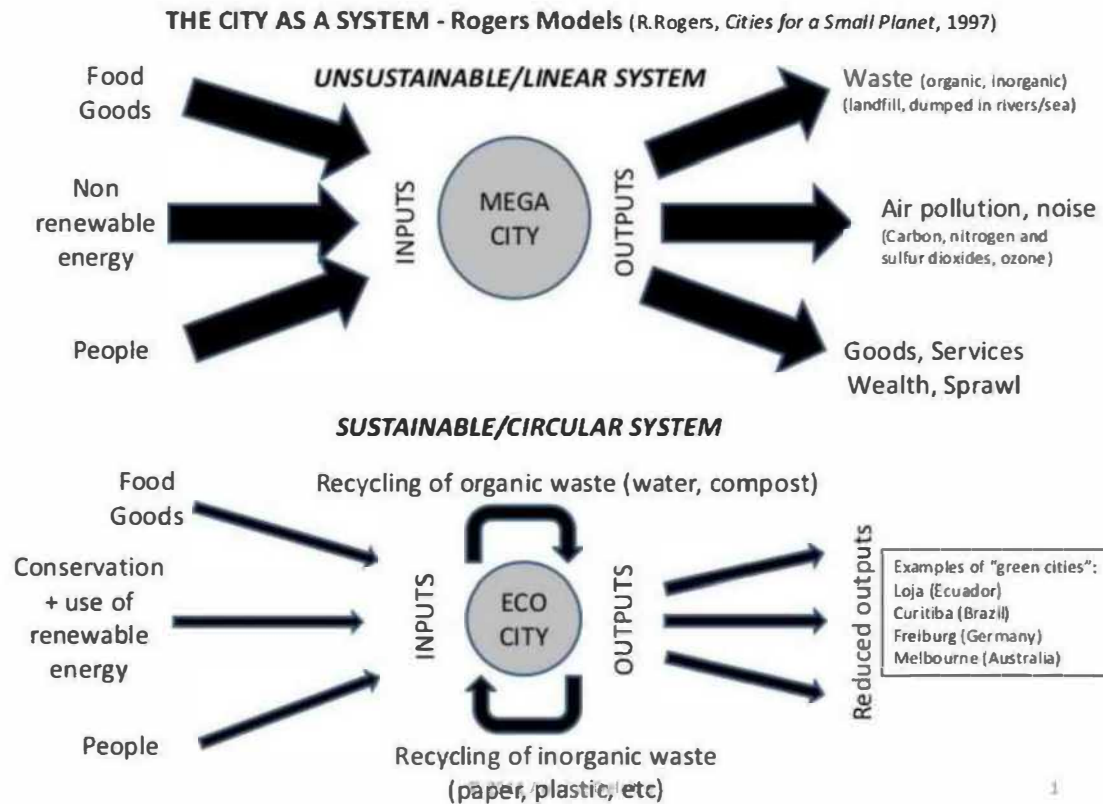
1.6.1 The Rogers Model

This model to explain urban sustainability was developed by Roger in 1997 is which describes a sustainable city as a system "because it consists of inputs, process and outputs." (Yambilla) The sustainable city is described by the Rogers model as a 'circular metabolism city' and the unsustainable one as a 'linear metabolism city' (Yambilla) The Rogers model takes into account the city's source of energy, ways of waste disposal and pollution among others. Both Makoni and Zengeza have inputs which include the electricity they use in their homes and the crude oil the use for cars. Some of the processes in these two communities include the use of the mentioned inputs and the outputs refer to the resulting effects from



using these inputs which include air pollution and waste. The model is shown below in Figure 5.

Figure 4: The Rogers model for Sustainability



Source: (Cohen; Nagle, 2011)

1.6.2 Egan Wheel of sustainability

The Egan Wheel for sustainable communities was incorporated into this research because it looks at more indicators for sustainability that are not clear in the Rogers model. It indicates that a sustainable city or community must not only make effective use of its natural resources and enhance its environment but should also promote social cohesion and promote economic growth (Portney). In relation to Zengeza 3 and Makoni, a community will be considered



sustainable if can provide enough services to all and has a well-run government with effective leadership.

Figure 5: The Egar's model for sustainable cities



Source: (Gottschling, 2007)

2.0 METHODOLOGY

2.0.1 Sample design

The total number of respondents from both areas was 123, 60 people answered my questionnaire from Makoni and 63 from Zengeza. I chose this number because it is large enough to make conclusions from and also small enough for me to work with. I adopted a systematic sampling method to pick my respondents. This was mainly to reduce bias and



prevent the temptation to hand over my questionnaire to those who I thought will answer it correctly. I walked in the communities and went to the 3rd house alternating between houses to my right and those to my left. (Pallister and Bowen 22).

2.0.2 Method of data collection.

Both primary and secondary sources were used to collect data. The primary sources were questionnaires, personal observation and interviews. These allowed me to get first-hand information from the respondents to questions such as levels of education, levels of income, among others. The questionnaire had both-open ended and closed-ended questions. The open-ended questions were to give the respondents the opportunity to justify their responses to the questions. The close ended questions were employed mainly to save time. There were also questions that required that the respondents provide a rating on some of the services provided in their different communities.

Together with secondary sources such as textbooks, papers by institutions, diagrams, maps and photograph were used as sources for the investigation and also provide other different opinions on the factors that affect the sustainability of cities. Personal observation was also used to make judgments about the city. In Makoni, most of the questions had to be translated into Shona¹, the main language spoken by the respondents there to ensure that the respondents understood the questions and therefore can give reliable and meaningful responses.

2.0.3 Methods of data presentation and data analysis

Different ways of data presentation were used to give a visual presentation of my research findings which include pie charts, bar graphs, and population distribution models among the others.

¹ Shona: The local language spoken by most Zimbabweans



For the extended quantitative analysis, the Statistical Package for Social Sciences (SPSS) software was used and statistical tools like the Pearson's correlation and the chi-Squared test were used to test the hypothesis.

2.0.4 Variables

The independent variable in this investigation is the different communities/ towns from where data was collected. The dependent variable was the varying levels of sustainability. The indicators for sustainability were divided into economic, social and environmental indicators (Table 1).

Table 1: Table showing the variables to be investigated

ECONOMIC	SOCIAL	ENVIRONMENTAL
Levels of income	Level of education	Methods of waste disposal
Distance travelled to access services		Air quality
		Mode of transport

Source: Author, 2017

3.0 Data Presentation and Analysis

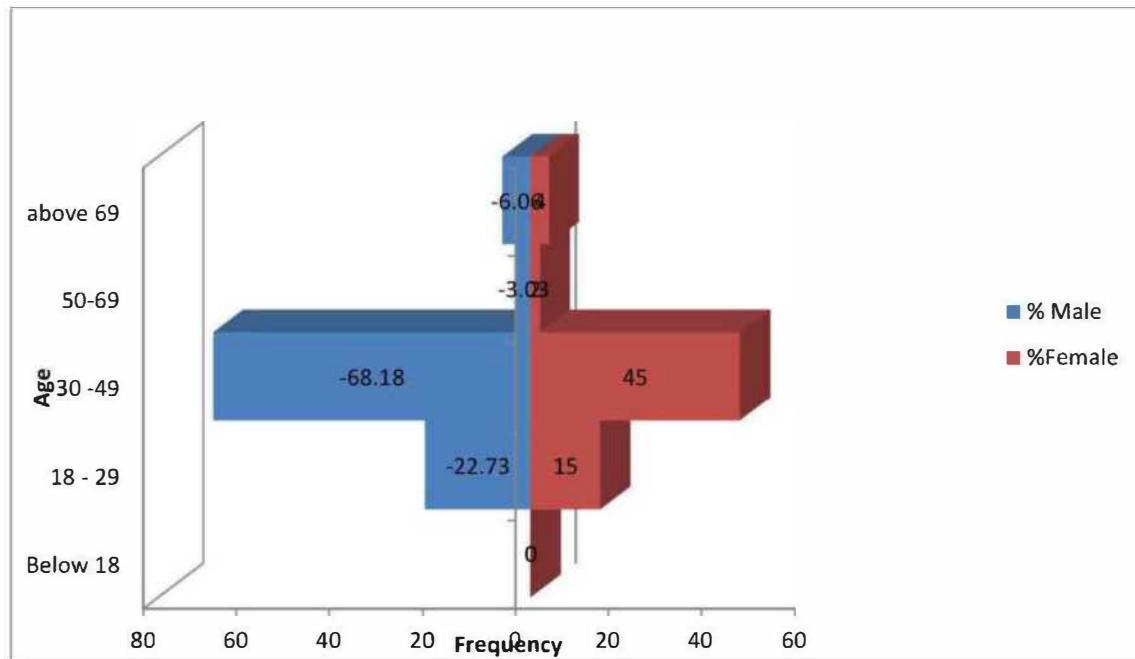
Sustainable development in a city must have the ability to combine economic, social and environmental sustainability combine all to generate a sustainable city (Goodland, 1995).

3.1 Background Characteristics

3.1.1 Age/ Sex distribution

Figure 6: Population Pyramid Showing Age/Sex distribution for the respondents





Source: Field Data, 2017

Figure 6 shows the age distributions of the respondents; grouped into five groups. It shows that 45% of the female respondents in both areas were within the age group 30 – 49, 15% within the 18-29 age group, 2% within the 50-69, 4% accounting for those above 69 and none of the respondents were below 18. This is because the data was collected on a week day and most people below the age of 18 had gone to school.

3.2 Environmental Factors

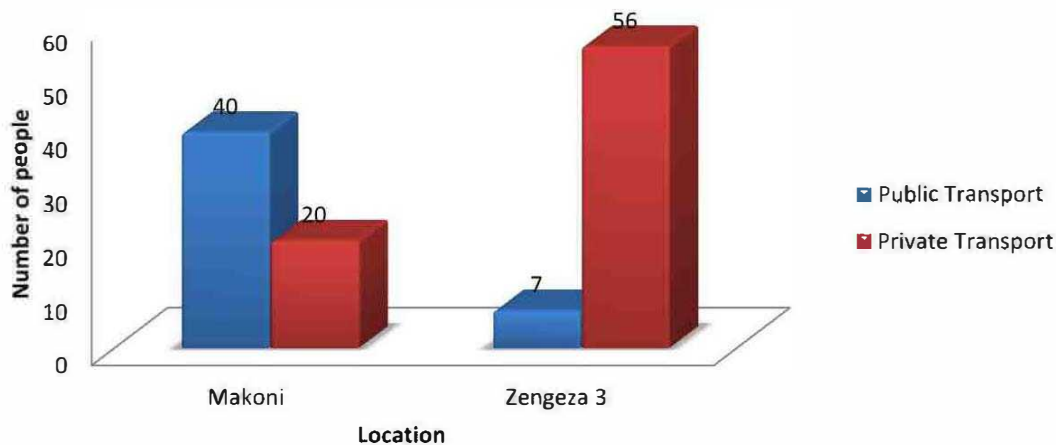
3.2.1 Mode of transport

One of the greatest challenges faced by mayors is the planning and investing wisely in sustainable urban transport. Transport has an important role in urban development by making it easier for people to access most of their basic needs be it good or services. The mode of transport used by the people plays a crucial role in the level of sustainability of the city. If many people in a community are using private cars, it means there will be more carbon



dioxide emissions into the atmosphere and this will reduce the level of sustainability of that particular city. On the other hand, if a larger percentage of people in a community are using public transport, the overall level of carbon dioxide emissions will be lower that it would have been if all the people were using private cars. The more the income people in a community have, the more likely they are to travel to different area “just as their income permits” (Hall, 74).

Figure 7: Bar graph showing the type of transport used in the areas of study



Source: Field Data, 2017

Figure 8 illustrates the two main modes of transport that are used in both Makoni and Zengeza 3. As can be seen above, 26.3% of all the respondents who use private transport are from Makoni whilst 73.7% of the people use private transport from Zengeza. It is evident that most of the people living in Zengeza 3 prefer or can afford to use their own cars instead of public transport. This can be as result of the fact that people living in Zengeza 3 have higher levels of income as shown in Figure 9. In contrast, of all the 123 respondents who were



handled the questionnaire, 85.1% of those using public transport are from Makoni and only 14.9% represent those living in Zengeza 3 and make use of the public transport. This again can be explained by the fact that people in Makoni earn less income than those in Zengeza 3 and therefore cannot afford to buy private cars.

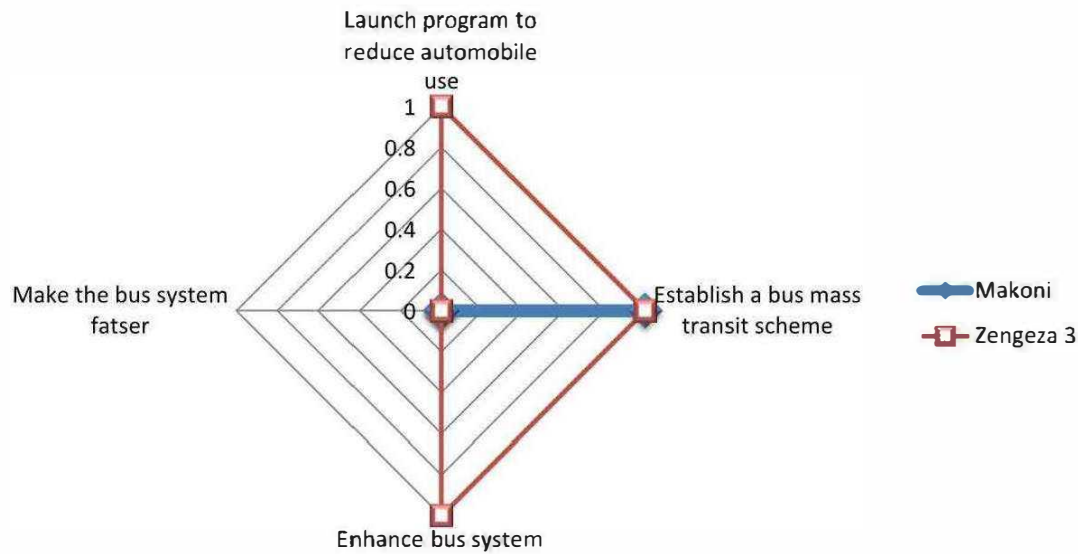
Using the Rogers Model of sustainability, Makoni is considered to be more environmentally sustainable as fewer cars on the roads mean that there is less air pollution from carbon dioxides and also reduced noise pollution that may arise from the movement of cars. This also suggests that fewer resources like crude oil are being used and therefore there is less environmental degradation. It can also be argued that even though Zengeza has more cars on the roads, it is more sustainable than Makoni because the people have new cars unlike those in Makoni who use old cars which produce a lot of pollutants and noise pollution.

3.2.2 Government Policies

Figure 8: Showing the policies to try and improve public transportation

Even though Jiangping Zhou argues that sustainable transportation is as a result of people's growing curiosity and concern about environmental quality, social equality, economic vitality, and the threat of global climate change, (Zhou, 5), Ralph Hall, believes that people should rather focus on “road map for developing policy that will move transportation system towards sustainability” (Hall, 76). To test for Hall’s suggestion, I was curious to find out if the government of Zimbabwe was trying to encourage or discourage the use of private transportation.





Source: Field Data, 2017

Figure 8 shows data collected from the Environmental Sustainability Index (Appendix) All the four variables (i.e. launch to reduce automobile use, Establish a bus mass transit scheme, enhance the bus system and making the bus system faster) were answered using the Boolean answers Yes or No. To be able to graph this information, all the Yes answers are represented by 1 and the No answers are shown by the 0.

It can therefore as shown in the diagram be inferred that the government of Zimbabwe is trying to reduce the use of private cars in Zengeza 3 as they try to make the public transportation system more attractive and thereby getting people in Zengeza 3 to start using the public transport. Because people in Makoni are already making use of public transport, the government has not put in place measures to improve the public transport system. If this attempt is successful, the reduction in the number of private cars on the roads will mean that there is a reduction in the amount of pollutants and resources demanded thereby increasing the level of environmental sustainability in Zengeza 3.



Testing of hypothesis (Pearson Correlation Calculations)

(H₀) The number of cars on the road does not determine the level of sustainability.

(H₁) The number of cars on the road does not determine the level of sustainability.

Table 2: Table showing Pearson Correlation for Mode of Transport

Correlations			
		Mode of transport	Where do you live
Mode of transport	Pearson Correlation	1	.572**
	Sig. (1-tailed)		.000
	N	123	123
Where do you live	Pearson Correlation	.572**	1
	Sig. (1-tailed)	.000	
	N	123	123
**. Correlation is significant at the 0.01 level (1-tailed).			

Source: Field Data, 2017

To test for this variable, the Pearson's correlation coefficient was used. As indicated in table 2, the mode of transport used by a group of people in a community was tested against their location i.e. Makoni and Zengeza 3. There was a positive correlation coefficient of 0.572 which suggests there is a relationship between the two variables and so we accept the (H₁). The value of the coefficient observed is also closer to 1 than it is to 0 and so it can be concluded that there is a very strong correlation between the variables. This could be due to the fact a lot of people in Zengeza 3 have private cars and those in Makoni use public transportation.



3.2.3: Air quality

Table 3: The relationship between the methods of waste disposal and the air quality of that particular area

		How do you dispose of your waste			Total
		Burn	Dump at local dumpsite	The city collects our waste	
Rate the Air Quality	Extremely Polluted	15	9	0	24
		62.5%	37.5%	0.0%	100.0%
		53.6%	28.1%	0.0%	19.5%
		12.2%	7.3%	0.0%	19.5%
	Polluted	10	19	2	31
		32.3%	61.3%	6.5%	100.0%
		35.7%	59.4%	3.2%	25.2%
		8.1%	15.4%	1.6%	25.2%
	Manageable	2	4	8	14
		14.3%	28.6%	57.1%	100.0%
		7.1%	12.5%	12.7%	11.4%
		1.6%	3.3%	6.5%	11.4%
	Clean	1	0	25	26
		3.8%	0.0%	96.2%	100.0%
		3.6%	0.0%	39.7%	21.1%
		0.8%	0.0%	20.3%	21.1%
	Very Clean	0	0	28	28
		0.0%	0.0%	100.0%	100.0%
		0.0%	0.0%	44.4%	22.8%
		0.0%	0.0%	22.8%	22.8%

Source: Field Data, 2017

Table 3 shows a cross tabulation that seeks to find the relationship between the methods of waste disposal in both communities and their effect on the air quality. The air quality was



rated on the scale 1 to 5, 1 describing the air quality as extremely polluted and 5 as very clean. According to the table, 37.7% of the respondents burn their waste as their method of waste disposal and they represent 31.7% of the respondents. These people also make up 62.5% of all the people who complain that the air quality is “extreme polluted.” 33.3% of respondents have the city authorities coming to collect their waste representing 64.3% of all the respondents who also believe their air quality is very good.

According to Table 3, the people who experience the highest form of air pollution are those who burn their waste (62.5% of all the people experiencing extremely bad air pollution.) This could be due to the fact that that approximately 45% of all garbage is made of carbon (by mass) and this means that carbon dioxide will be the main gas emitted when waste is burnt (Central, 2014).

According to both the Rogers’ and the Egars Model for sustainability, a sustainable city should have fewer amounts of pollutants in the air. Using this variable, it can be concluded that Zengeza 3 is a more sustainable and therefore can be considered a circular metabolism community as its air is ‘cleaner’ than that in Makoni. This is because inferring from the data collected, 98.4% of the people in Zengeza 3 have their waste collected by the city authorities and they represent 64.3% of the respondents who described their air as “Very clean.”

Test of hypothesis using the Chi-Squared Test

H_0 : The air quality in Zengeza 3 does not determine its level of sustainability

H_1 : The air quality in Zengeza 3 determines its level of sustainability.



Table 4: Table of Values Showing Calculation of Chi-Square Statistic for Air Quality

Air quality	Observed Value (O)	Expected Value (E)	(O-E)	(O-E) ²	$\frac{(O-E)^2}{E}$
Extremely Polluted	24	24.6	-0.6	0.36	0.015
Polluted	31	24.6	6.4	40.96	1.665
Manageable	14	24.6	-10.6	112.36	4.567
Clean	26	24.6	1.4	1.96	0.080
Very Clean	28	24.6	3.4	11.56	0.470

Source: Field data, 2017

$\chi^2 = 6.797$

Sample calculations

Expected value (E) = Average of Observed Values (O)

$$\text{Expected Value} = \frac{24+31+14+26+28}{45}$$

$$=24.6$$

Degree of freedom (df) = (n -1)

$$= 5-1$$

$$= 4$$

χ^2 computed value = 6.797

χ^2 critical value = 9.488

The level of significance is 0.05 (95% confidence level)



Assuming that the better the air quality in a community, the more sustainable that it is considered, the χ^2 computed value is 6.797 and the critical value at 4 degrees of freedom which is 9.488 and confidence level 99%. We realise that the chi-squared calculated value is less than the critical χ^2 value and so we accept (H_0). This implies that the air quality in Zengeza 3 or Makoni cannot indicate the extent to which that city can be considered a sustainable city. This challenges both the Roger's_model for sustainable cities and the Egan Wheel of sustainable cities which states that for a city to be considered as sustainable, it should produce minimum pollution and live lives that are environmentally friendly.

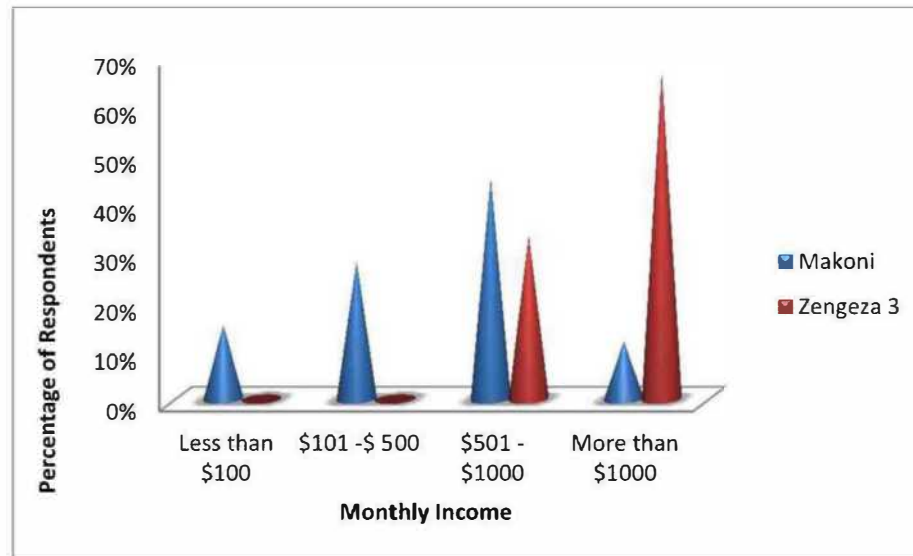
3.3 Economic Factors

3.3.1 Level of Income

Income is another indicator that should be considered when analysing the level of sustainability of a city. In the survey conducted, the respondents were asked to indicate their levels of income on given ranges.



Figure 9: The level of income of the respondents in Zengeza 3 and Makoni



Source: Field data, 2017

Figure 9 illustrates different income ranges earned by the people living in Makoni and Zengeza3. 34.45% of the respondents from Makoni have an average income range from \$501 to \$1000. This is because Makoni is a high density suburb with low income residents. 66.70% of the respondents from Zengeza 3 fall in the income range of more than \$1000 and this is because most of the people who live there are high income earners. Out of the people who earn income ranging from \$501 to \$1000 in both communities, 51% are from Makoni and 49% of the respondents earning within this income range are from Zengeza 3. And out of all the people who earn more than \$1000 per month, 80% of them are from Zengeza 3 and only 20% are from Makoni.

Higher income earners are more likely to demand more goods and services and make use of private cars and thereby increasing the pressure on resources decreasing the extent to which the town they reside can be considered to be sustainable. On the other hand, people with higher levels of income are more likely to have been exposed to further education and



therefore may be aware of the impacts of their actions on their environment and try to reduce direct impact. An example will be the use of hydrogen and electric cars in the future. It can be concluded therefore using the Rogers' model that Makoni is a more sustainable community than Zengeza 3 since the people living there have lower incomes and are likely to have a few inputs (e.g fuel) and therefore they will produce fewer outputs (e.g pollution from cars.) The Egars wheel for sustainable communities however states that the more money circulating in a community the more sustainable it is considered and therefore Zengeza 3 is more sustainable than Makoni.

Testing of the hypothesis using the Chi-Squared Test

H_0 : The level of sustainability does not differ between Makoni and Zengeza 3

H_1 : The level of sustainability differs between Makoni and Zengeza 3

Table: 5: Table of Values Showing Calculation of Chi-Square Statistic for Levels of Income

Income Level	Observed Value (O)	Expected Value (E)	(O-E)	(O-E) ²	$\sum \frac{(O-E)^2}{E}$
Less than \$100	9	30.75	-21.75	473.06	15.38
\$101 - \$500	17	30.75	-13.75	189.06	6.15
\$501 - \$1000	48	30.75	17.25	297.56	6.20
More than \$1000	49	30.75	18.25	333.06	6.80

Source: Field data, 2017

$\chi^2 =$

34.53



Sample calculations

Expected value (E) = Average of Observed Values (O)

$$\begin{aligned}\text{Expected Value} &= \frac{9+17+48+49}{4} \\ &= 30.75\end{aligned}$$

$$\begin{aligned}\text{Degree of freedom (df)} &= (n - 1) \\ &= 4 - 1 \\ &= 3\end{aligned}$$

$$X^2 \text{ computed value} = 34.53$$

$$X^2 \text{ critical value} = 7.81$$

The level of significance is 0.05 (95% confidence level)

Assuming that income is used to represent the level to which a city can be considered to be a sustainable one; the x^2 calculated value is 34.53 and the critical value at degree of freedom 3 and level of significance 0.05 is 7.81. Clearly, the x^2 value is greater than the critical X^2 value and therefore we accept (H_1) that the education leads to higher levels of sustainability.

The chi squared calculations confirms the Edgar's Wheel for sustainable environments, which states that the more an economy is thriving, the more it is likely to be sustainable. On the bases of this investigation, Zengeza 3 is more sustainable than Makoni as on average people in Zengeza 3 earn higher incomes than those in Makoni.

Figure 10 and Figure 11 show the type of housing in Zengeza 3 and Makoni respectively. Because the respondents in Zengeza 3 have higher levels of education giving them access to better paid jobs, they can afford to build nicer houses in more affluent locations than the respondents from Makoni.



Figure 10: A picture showing a single wall and gated house in Zengeza 3

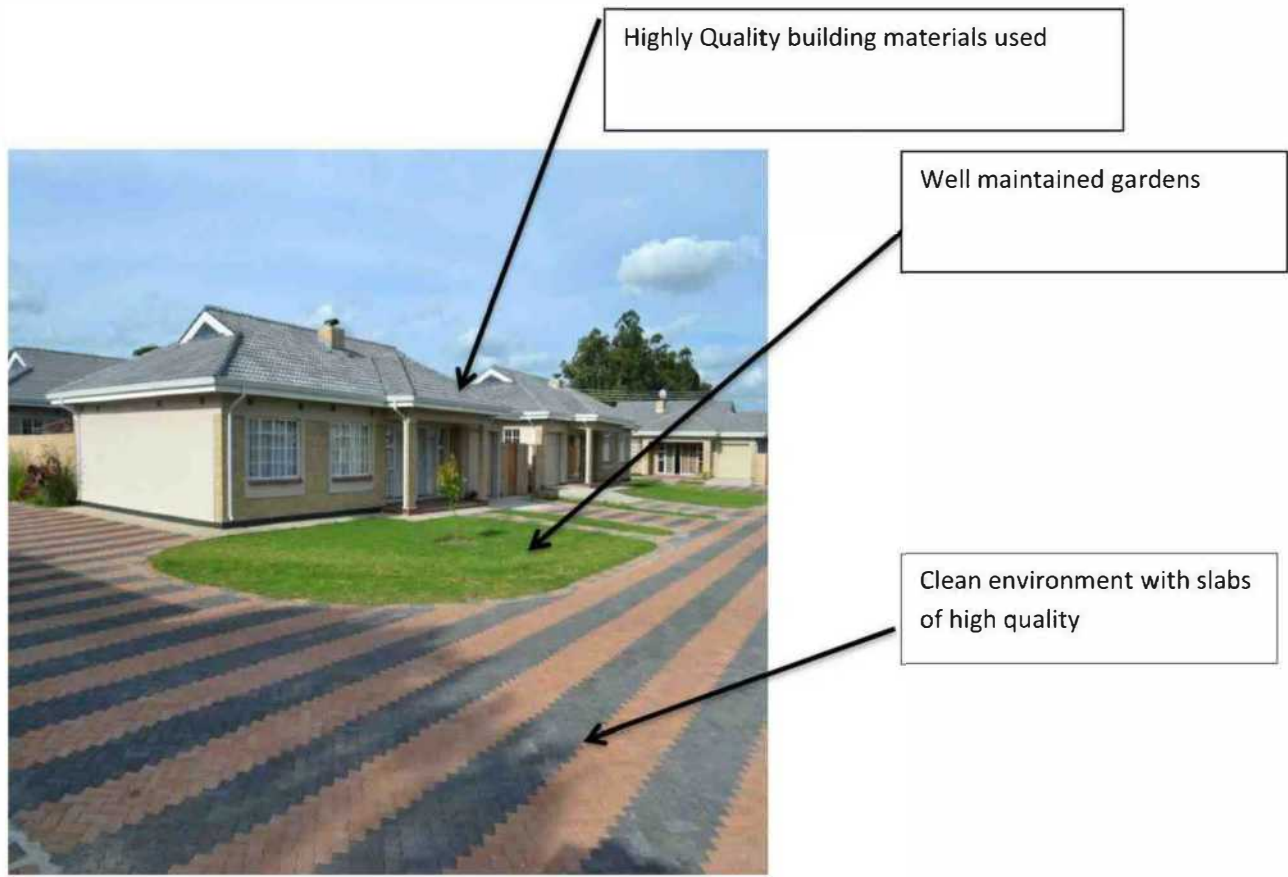


Figure 11: A picture showing a housing Complex in Makoni



Poor dilapidated buildings. Houses without walls, fence or gates

Poorly maintained environment with overgrown grass

Dirty environment with rubbish (mainly plastics) all over

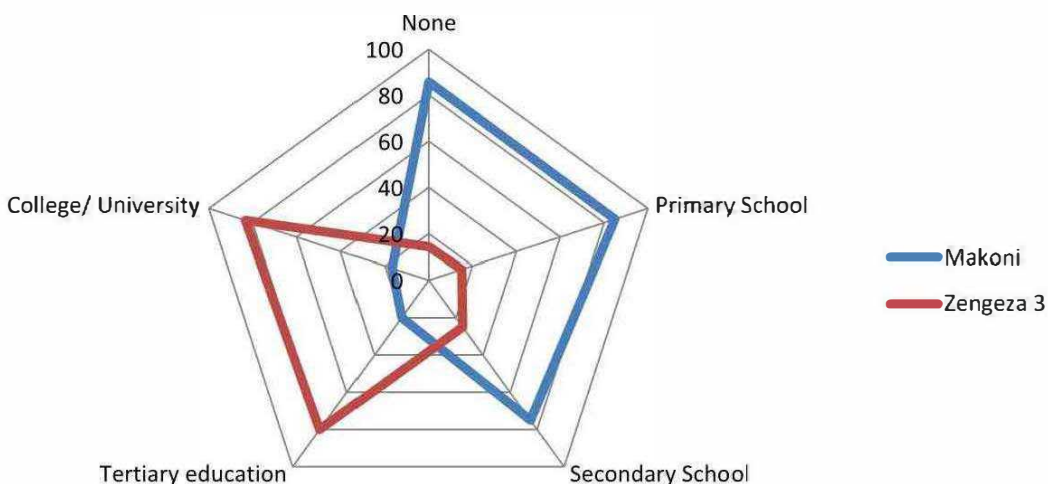
3.4 Social Indicators

3.4.1 Level of education

When people are educated on the importance of sustainability, there is a likely to be a more sustainable future for the community or the nation as a whole (Rosalyn McKeown). The higher the level of education a group of people has, the more likely they are to be aware of the implications of their actions on the level of sustainability of their environment.



Figure 12: A radar graph showing the highest level of education attained by the people in the two areas of study



Source: Field Data, 2017

According to Figure 12, 85.7% of the people who had no basic education lived in Makoni and 14.3% in Zengeza 4. According to the data collected, about 83.3% of the people who attained college or university education are from Zengeza 3 and only 16.7% of the whole group represented the people from Makoni who had attained college or university education.

The fall in the number of people getting further education in Makoni is likely to be due to lack of money of the people in Makoni. The fact that they do not further their education means that they are likely to have a limited technological know-how and therefore cannot get good jobs leading to the poverty cycle. This explains the value for the low levels of income Makoni. It can also be added that there is a great number of people in Makoni who have been able to get into Primary school because the government of subsidised basic education. The fewer number of people attending Secondary and post-secondary education could be as a



result of increased secondary school fees as a result of the policies implemented by the ex-Minister of Education Sir David Coltart saying parent should not be “evil” and expect their children to get high quality education when they cannot afford it “How do [you] expect the teachers to make a living?” (Ignatius Banda).

On the other hand, the distribution of the highest level of education attained by the respondents from Zengeza 3 contrasts with that of the respondents from Makoni. A similar research by Eurostat show that the higher your level of education is, the higher your chances of getting a good job and the less people are to depend on the environment thereby promoting environmental sustainability (Eurostat). In the case that that income is used as a measure for the level of sustainability of a city, Zengeza 3 is more sustainable than Makoni.

Using the Egars wheel for sustainable communities, Zengeza 3 is more sustainable than Makoni as societies with educated people can develop at a lower cost and have effective self-regulating mechanisms which improves the level of sustainability in that community (stateuniversity). Makoni is therefore considered as a linear metabolism community.

Testing of hypothesis (Pearson Correlation Calculations)

(H₀) The highest level of education attained by the residents does not affect the level of sustainability of either Makoni or Zengeza 3

(H₁) The highest level of education attained by the residents affects the level of sustainability of either Makoni or Zengeza 3



Table 6: Table of Values Showing Calculation of Chi-Square Statistic for Level of Education

Correlations			
		Highest Level of education	Where do you live
Highest Level of education	Pearson Correlation	1	.605**
	Sig. (1-tailed)		.000
	N	123	123
Where do you live	Pearson Correlation	.605**	1
	Sig. (1-tailed)	.000	
	N	123	123
**, Correlation is significant at the 0.01 level (1-tailed).			

Source: Field Data, 2017

To test for this variable, the Pearson's correlation coefficient was used. As shown in the table above, the highest level of education attained by the people was tested against their location i.e. Makoni and Zengeza 3. There was a correlation coefficient of 0.605 which suggests positive correlation between the two variables and so we accept the (H_1). The value of the coefficient observed is also closer to 1 than it is to 0 and so it can be concluded that there is a very strong correlation between the variables. This correlation could be due to the fact that if one attained higher levels of education (eg Tertiary or university education) they have higher prospects of getting a good job and earn more money and therefore can afford to live in affluent neighbourhoods like Zengeza 3.



4.0 Conclusion

The purpose of this research was to find the extent to which the level of sustainability of Makoni differs from that of Zengeza 3. A number of Chi-squared tests and Pearson Correlation coefficient that were conducted proved that the hypothesis made was partially true. This is because some of the calculations gave evidence that Makoni is a more sustainable community than Zengeza 3. The mode of transport proves that Makoni is more sustainable than Zengeza 3 because respondents from Makoni use public transport as opposed to private transport used in Zengeza 3. The Chi-squared calculations indicated that there is a statistically significant difference in the level of environmental sustainability in Makoni and Zengeza 3. It can be concluded that socially, Zengeza 3 is a more sustainable city than Makoni because its residents are informed about the implications of their actions. These anomalies were observed all over the data analysis and support the claims made by both the conceptual models that sustainability cannot be achieved by focusing on only one area of the community and totally abandoning the others but rather a balance among all the variables.

The main factor that reduces the reliability of this research is the number of responses collected which amounted only to 123 which is not a large enough number to make conclusions about two communities. I had planned to issue more questionnaires but restraints like time and the peoples' reluctance to fill the questionnaires made it impossible.

Another inaccuracy that came up during the course of the data collection was the fact that the data was collected on a weekday and so most people below the age of 18 had gone to school. Also some the respondents who answered my questionnaires were answering the questionnaire based on their fantasies not the reality. This affected mainly the question on income and the number of cars owned by the respondent. There was also the problem of



double counting cars as a couple may fill two different questionnaires and indicate that they both have a car when they actually share it.

A strength that can be attributed to this research is the fact that the questionnaire was developed based on the indicators of two models used and therefore the data collected can be used to make meaningful data in relation to these two models.

The interviews I conducted helped me get a better insight into the way of living of the people and my own personal observations helped me analyse most of the environmental factors. The questionnaire was not very long and so people who did not have a lot of time could just fill it in a few minutes and continue with their work.

To improve this research, it is advisable that data is collected on a weekday when students have not gone to school and other people who go to work will be available. It will also be beneficial if the data was collected during times that people are not having their lunch and it is more likely that they will be willing to fill in the questionnaires.



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Appendix

Appendix 2: Questionnaire

Hello, my name is Tsitsi Mabangure a student from SOS Hermann Gmeiner International College, Tema, Ghana. I am conducting a research on sustainability of Chitungwiza for my IB Extended Essay. This questionnaire will only be used for the intended academic purpose. I would be grateful if you could honestly answer all the questions

A1. Sex

1. Male
2. Female

A2. Age.....

A3. How many cars do you have?

1. None
2. One
3. Two
4. Three or more

A4. How do you move from one place to the other in the city?

1. Public transport
2. I use my car
3. Train

A5. How far do you travel for the purpose of shopping or any other business in the city?

1. Less than 1km
2. 2km
3. 3km
4. 4km
5. 5km or more

A6. Are you satisfied with the type of services provided in this area by the city authorities?

1. Yes
2. No

On a scale of 1-5 with 5 being the best, rate the following

A7. Entertainment.....

A8. How well kept the environment is.....

A9. The air quality.....

On a scale of 1-3 with 3 being the best, rate the following



A10. How safe you feel.....

A11. How easy it is to access any part of the city by road or train.....

A12. How do you dispose of your waste?

1. Burn
2. Dump at a local dumpsite
3. The city Authority collects our waste
4. Other

A13. On a scale of 1 to 5, rate the air quality in your environment.

A14. Rate the city's water quality

1. Very dirty
2. Dirty
3. Average
4. Clean
5. Very clean

A15. How often does the government collect your waste?

1. Never
2. Once a week
3. Twice a week
4. More than twice a week

A16. How much do you earn in a month?

1. Less than \$100
2. \$101 - \$500
3. \$501- \$1000
4. More than \$1000

A17. Where do you live

1. Makoni
2. Zengeza 3

B. Economic sustainability index

Presence of policy issue	Yes or No
Launch program to reduce automobile use	
Establish a modern bus mass transit scheme	
Enhance bus system efficiency to draw riders	
Make bus transit fast, cheap and comfortable	



Place high density living near major arterials	
Zone for mixed residential or commercial use	
Make downtown streets pedestrian malls	
Expand green zones to safeguard open space	
Enact regulations to protect every urban tree	
Encourage residents to separate their garbage	
Set up programs to recycle material wastes	
Enlist the aid of children in recycling efforts	
Develop a low emissions industrial zone	
Enact policies to give the poor basic services	

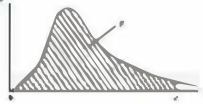


Appendix 2

Figure 13: Table showing the critical values for the Chi-Squared calculations.

Critical values of the χ^2 -distribution
(topic 8.6, further mathematics SL topic 2.6)

$p = P(X \leq c)$



p	0.005	0.01	0.025	0.05	0.1	0.9	0.95	0.975	0.99	0.995
1	0.00004	0.0001	0.001	0.004	0.016	2.706	3.841	5.024	6.635	7.879
2	0.010	0.020	0.051	0.103	0.211	4.605	5.991	7.378	9.210	10.597
3	0.072	0.115	0.216	0.352	0.584	6.251	7.879	9.348	11.345	12.838
4	0.207	0.297	0.484	0.711	1.064	7.779	9.488	11.143	13.277	14.860
5	0.412	0.554	0.831	1.143	1.610	9.236	11.070	12.833	15.086	16.750
6	0.676	0.872	1.237	1.635	2.204	10.645	12.592	14.449	16.812	18.548
7	0.989	1.239	1.690	2.167	2.833	12.017	14.067	16.013	18.475	20.278
8	1.344	1.646	2.180	2.733	3.490	13.362	15.507	17.535	20.090	21.955
9	1.735	2.088	2.700	3.325	4.168	14.684	16.919	19.023	21.666	23.589
10	2.156	2.558	3.247	3.940	4.865	15.987	18.307	20.483	23.209	25.188
11	2.603	3.053	3.816	4.575	5.578	17.275	19.675	21.920	24.723	26.757
12	3.074	3.571	4.404	5.226	6.304	18.549	21.026	23.337	26.217	28.300
13	3.565	4.107	5.009	5.892	7.042	19.812	22.362	24.736	27.688	29.819
14	4.075	4.660	5.629	6.571	7.790	21.064	23.685	26.119	29.141	31.319
15	4.601	5.229	6.262	7.261	8.547	22.307	24.996	27.488	30.578	32.801
16	5.142	5.812	6.908	7.962	9.312	23.542	26.296	28.845	32.000	34.267
17	5.697	6.408	7.564	8.672	10.085	24.769	27.587	30.191	33.409	35.718
18	6.265	7.015	8.231	9.390	10.865	25.989	28.869	31.526	34.805	37.156
19	6.844	7.633	8.907	10.117	11.651	27.204	30.144	32.852	36.191	38.582
20	7.434	8.260	9.591	10.851	12.443	28.412	31.410	34.170	37.566	39.997
21	8.034	8.897	10.283	11.591	13.240	29.615	32.672	35.479	38.932	41.401
22	8.643	9.542	10.982	12.338	14.041	30.813	33.924	36.781	40.289	42.796
23	9.260	10.196	11.689	13.091	14.848	32.007	35.172	38.076	41.638	44.181
24	9.886	10.856	12.401	13.846	15.659	33.196	36.415	39.364	42.980	45.559
25	10.520	11.524	13.120	14.611	16.473	34.382	37.652	40.646	44.314	46.928
26	11.160	12.198	13.844	15.379	17.292	35.563	38.885	41.923	45.642	48.290
27	11.808	12.879	14.573	16.151	18.114	36.741	40.113	43.195	46.963	49.645
28	12.461	13.565	15.306	16.928	18.939	37.916	41.337	44.461	48.278	50.993
29	13.121	14.256	16.047	17.708	19.768	39.087	42.557	45.722	49.583	52.336
30	13.787	14.953	16.781	18.499	20.599	40.256	43.773	46.979	50.892	53.672
40	20.707	22.164	24.433	26.509	29.051	51.805	55.758	59.342	63.691	66.766
50	27.991	29.707	32.357	34.764	37.689	63.167	67.505	71.420	76.154	79.490
60	35.534	37.485	40.482	43.188	46.459	74.397	79.082	83.298	88.379	91.972
70	43.275	45.442	48.758	51.739	55.329	85.527	90.531	95.023	100.425	104.215
80	51.172	53.540	57.153	60.391	64.278	96.578	101.879	106.629	112.329	116.321
90	59.196	61.754	65.647	69.126	73.291	107.565	113.145	118.136	124.116	128.299
100	67.328	70.065	74.222	77.929	82.358	118.498	124.342	129.561	135.807	140.169

$v = \text{number of degrees of freedom}$

Source: IB survival



THE CAUSE OF THE CHINESE EXCLUSION ACT AND THE DENVER ANTI-CHINESE RIOT 1852-1882



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“Whereas in the opinion of the Government of the United States the coming of Chinese laborers to this country endangers the good order of certain localities within the territory thereof.”

Introduction

The 19th century marked the beginning of Chinese immigrants in America. The first Chinese immigrants came to the United States in the 1810's, but large numbers only began to arrive around 1850, in California, when a number of factors came together to make the prospect of immigration much more attractive. The number of Chinese immigrants living in America doubled from 1848-1849, and continued to grow exponentially through the middle of the 19th century¹.

During this time, anti-Chinese sentiment grew greater and greater, leading up to the Chinese Exclusion Act of 1882. With the signature of the Chinese Exclusion Act by Chester Arthur, the United States banned all immigration by Chinese laborers. This would be the first time that a federal law had been passed to prohibit immigration of a certain nationality².

However, what factors led to the passage of the Chinese Exclusion Act? The most common explanation would be that the poor economic state of the US at the time caused resentment against the Chinese³. However, this explanation is oversimplified and ignores many other factors, such as the “Morey letter”, the circumstances of the 1880 election, and most importantly the unique timing of the 1880 Denver Anti-Chinese Riot. To what extent did the Denver

¹ Freedman, Maurice. “Immigrants and Associations: Chinese in Nineteenth-Century Singapore.” *Comparative Studies in Society and History*, vol. 3, no. 1, 1960, pp. 25–48.

² Scharf, J. Thomas. “The Farce of the Chinese Exclusion Laws.” *The North American Review* 166, no. 494 (1898): 85-97.

³ Wellborn, Mildred. “The Events Leading to the Chinese Exclusion Act.” *Annual Publication of the Historical Society of Southern California* 9, no. 1/2 (1912): 49-58.



Anti-Chinese Riot in 1880 hasten the passage of the Chinese Exclusion Act? This essay will analyze the historical trends of the Chinese, the evolution of American anti-Chinese sentiment, and the thought processes of the Republican Party in the late 19th century in order to argue that the Denver Anti-Chinese Riot was a part of a pivotal tipping point on the road to Chinese Exclusion. Although other factors were important as well, to the Republican Party in 1880 the Denver Anti-Chinese Riot of 1880 symbolized a shift in race relations and was a large part of a major change in mindset which would result in eventually in the passage of the Chinese Exclusion Act.



Chinese Immigration to the United States

This growth in immigration occurred for a number of reasons. The California gold rush of 1849, which lured over 300,000 people worldwide to California with the promise of wealth, heavily influenced China⁴. American sea captains looking for business in China spread word of the wealth obtainable in California, and the Chinese responded. More than 2,700 Chinese had arrived in San Francisco by 1851, and that number would continue to grow exponentially through the middle of the 19th century⁵. The US government reported 340,000 Chinese immigrants from 1852-1882⁶.

Another large factor was the harsh conditions in China at the time. China was going through the Taiping Rebellion, which resulted in 20-30 million casualties and to this day is one of the bloodiest wars ever⁷. In addition, overpopulation in China was quickly becoming a concern, as the government could not provide adequate education, land, and resources for many parts of the country. The population of China grew from 150 million in 1600 to 300 million in 1800, and then again to 430 million in 1850⁸. The Chinese economy was in bad shape overall because of these, and because of the Treaty of Nanking, which had ended the First Opium War and heavily regulated Chinese trade⁹. The prospect of employment and an escape from the

⁴ Roske, Ralph J. "The World Impact of the California Gold Rush 1849-1857." *Arizona and the West*, vol. 5, no. 3, 1963, pp. 187-232. JSTOR, JSTOR, www.jstor.org/stable/40167071.

⁵ Jorae, Wendy Rouse. *The Children of Chinatown: Growing Up Chinese American in San Francisco, 1850-1920*. University of North Carolina Press, 2009.

⁶ Miller, S. C. (1971), An East Coast Perspective To Chinese Exclusion, 1852-1882. *Historian*, 33: 183-201.

⁷ McCarthy, Charles J. "The Taiping Rebellion: Its Relevance to Modern China." *Philippine Studies*, vol. 17, no. 1, 1969, pp. 146-153. JSTOR, JSTOR, www.jstor.org/stable/42634502.

⁸ Zhu, Liping. *The Road to Chinese Exclusion: The Denver Riot, 1880 Election, and Rise of the West*. Lawrence, KS: University Press of Kansas, 2013.

⁹ Brandt, Loren. "Reflections on China's Late 19th and Early 20th-Century Economy." *The China Quarterly*, no. 150 (1997): 282-308.



poverty of home appealed to a large number of Chinese, especially in the Southern regions where these issues were most prevalent.

In addition, due to the willingness of these immigrants to take jobs at lower wages than those of their American counterparts, Chinese immigrants were heavily involved in the construction of railroads, especially the Transcontinental¹⁰. The Central Pacific railroad company went as far as to specifically sent recruiters to China in order to get more Chinese workers.¹¹ Famously, Mark Twain complimented Chinese labor, noting “A disorderly Chinaman is rare, and a lazy one does not exist¹².” Railroads such as the Transcontinental heavily relied on Chinese labour, as they could be used for dangerous jobs (such as those involving dynamite) and were paid a fraction of what white laborers made¹³. The Chinese eventually made up more than 90 percent of the laborers in the Central Pacific company, and many other railroads quickly followed suit in this trend¹⁴. It was a mutually beneficial relationship - the average Chinese worker made around a year’s salary in China in about a month working on the railroads, and the railroad company had a source of cheap, efficient labor¹⁵.

¹⁰ Carson, Scott Alan. “Chinese Sojourn Labor and the American Transcontinental Railroad.” *Journal of Institutional and Theoretical Economics (JITE) / Zeitschrift Für Die Gesamte Staatswissenschaft*, vol. 161, no. 1, 2005, pp. 80–102. JSTOR, JSTOR, www.jstor.org/stable/40752497.

¹¹ Kraus, George. “Chinese Laborers and the Construction of the Central Pacific.” *Utah Historical Quarterly* 37.1, 1969: 190-208.

¹² Twain, Mark. *Roughing it*. Layton, UT, American Publishing Company, 1872

¹³ Carson, Scott Alan. “Chinese Sojourn Labor and the American Transcontinental Railroad.” *Journal of Institutional and Theoretical Economics (JITE) / Zeitschrift Für Die Gesamte Staatswissenschaft*, vol. 161, no. 1, 2005, pp. 80–102. JSTOR, JSTOR, www.jstor.org/stable/40752497.

¹⁴ Zhu, Liping. *The Road to Chinese Exclusion: The Denver Riot, 1880 Election, and Rise of the West*. Lawrence, KS: University Press of Kansas, 2013.

¹⁵ Ibid.



The Economy and Chinese Discrimination in the US Pre 1873

The Chinese faced discrimination from the moment they stepped into the country. They were forced to pay a number of extra taxes as a result of state laws such as the Foreign Miners' Tax Act of 1850, the Foreign Miners' License Tax, and the "Act to Prohibit the 'Coolie Trade' by American Citizens in American Vessels".¹⁶ For example, a tax was passed in 1852 in California, which forced each miner who was not eligible for US citizenship to pay a \$4 fee a month¹⁷. However, the Naturalization Act of 1790, had previously made it so that only white immigrants could become citizens - it was impossible for the Chinese to become citizens¹⁸. This tax would become colloquially known as the "Chinese" miners' tax because of this - the tax would eventually be deemed unconstitutional in 1870, but in the time between the state collected over 4.5 million dollars from Chinese miners, which accounted for half the state's total revenue¹⁹.

While the Chinese were important for the economy in many regards, they still drew much resentment from the working class. Some of this came from the occupations they took on - Chinese miners would often wait until white miners had already gone through a mine and left, and then meticulously go through and find scraps that the original miners had missed²⁰. The Chinese were also often involved in illicit activities such as gambling and prostitution²¹.

¹⁶ Kanazawa, Mark. "Immigration, Exclusion, and Taxation: Anti-Chinese Legislation in Gold Rush California." *The Journal of Economic History*, vol. 65, no. 3, 2005, pp. 779–805.

¹⁷ Zhu, Liping. *The Road to Chinese Exclusion: The Denver Riot, 1880 Election, and Rise of the West*. Lawrence, KS: University Press of Kansas, 2013.

¹⁸ Molina, Natalia. *How Race Is Made in America: Immigration, Citizenship, and the Historical Power of Racial Scripts*. 1st ed., University of California Press, 2014.

¹⁹ Wellborn, Mildred. "The Events Leading to the Chinese Exclusion Act." *Annual Publication of the Historical Society of Southern California* 9, no. 1/2 (1912): 49-58.

²⁰ Zhu, Liping. *The Road to Chinese Exclusion: The Denver Riot, 1880 Election, and Rise of the West*. Lawrence, KS: University Press of Kansas, 2013.

²¹ Ibid.



However, the main cause of resentment was the pay of the Chinese - they often accepted lower wages than the average worker. Many people, especially Democrats, feared that this would force Americans to either take pay cuts or lose their jobs. These fears were not unfounded. After the completion of the railroads, some Chinese went to the East, (although the vast majority still lived in the West), where manufacturers seized on them as a bargaining chip against up and coming labor unions - the Chinese could easily be used to replace white manual laborers at a lower cost, and as such many businesses gave their employees a choice - to take a pay cut, or to lose their job to a Chinese laborer²². Unsurprisingly, the working class was outraged, both at these companies and at the Chinese.

The Panic of 1873

Mainly due to overspeculation in the railroad industry as well as several overseas market crashes, the US economy stagnated from 1873-1879 in what is known as the Panic of 1873²³. Unemployment rates doubled from 1873 to 1879, as many companies laid off their workers²⁴. On the other hand, the Chinese population in the West grew during this time period - there were 5,000 Chinese living in California in 1870, but by the end of the decade there were 75,000²⁵.

²² Ibid.

²³ Barreyre, Nicolas. "The Politics of Economic Crises: The Panic of 1873, the End of Reconstruction, and the Realignment of American Politics." *The Journal of the Gilded Age and Progressive Era* 10, no. 4 (2011): 403-23

²⁴ Vernon, JR. "Unemployment Rates In Postbellum America: 1869-1899", *Louisiana States University Press*, 1994: 710.

²⁵ Hicks, John, *The American Nation: A History of the United States from 1865 to the Present* (Houghton Mifflin Company, 1937) 142



They made up about 9% of California's population and about 18% of its laborers, while working for "Coolie wages", or much lower than what white workers expected.²⁶

The Panic of 1873 was the cause of much anti-Chinese sentiment in the US, especially the West. Every economic issue that the working class had with the Chinese before 1873 was amplified tenfold - their lower wages, their willingness to do manual labor, and the attention that they drew from employers²⁷. There was resentment against the upper class because of the jobs crisis, and this too was partially directed against the Chinese - in the eyes of the public, both the Chinese and the people who employed them were responsible from taking jobs away from Americans. This economic resentment built up, and manifested itself both politically and socially.

The Chinese Socially

The issue with the Chinese ran deeper than just the economy. With the Chinese immigrants came the introduction of opium to the US²⁸. Despite the majority of opium users being white, the Chinese were blamed for introducing this new vice²⁹³⁰. The Chinese immigrants also had no problem with gambling, which was perceived as sinful by most Americans. They were portrayed as spineless, conniving, and greedy in the media, as many newspapers (especially

²⁶ Hicks, John 143

²⁷ Zhu, Liping. *The Road to Chinese Exclusion: The Denver Riot, 1880 Election, and Rise of the West*. Lawrence, KS: University Press of Kansas, 2013.

²⁸ Ibid.

²⁹ Ibid.

³⁰ "Fumes from the Orient." *Rocky Mountain News* (Denver, CO). March 28, 1880.



Democratic ones) posed questions about how the “Chinese Question” and the “pest of the west” could be culled³¹.

They were also deprived of several social rights: it was illegal for a Chinese man to marry a white woman, and many establishments had “no Chinese” policies³². Legally, a Chinese person meant very little, especially in the West. In California, in 1854, a Chinese miner was murdered, and a white man, George W. Hall, was convicted³³. In an appeal to the California Supreme Court, the case *The People of the State of California v. George W. Hall*, Hall was freed, as the Supreme Court ruled that the Chinese could not testify against white citizens³⁴.

Tensions arose even higher in the 1870s. With the worldwide Panic of 1873 (a part of the Long Depression), unemployment rose dramatically as many laborers were laid off³⁵. Around this time labor unions were also on the rise (many labor unions such as the National Labor Union refused to even consider Chinese applicants)³⁶. The Chinese were relatively unaffected by the panic (compared to the average American) because of their lower wages and their willingness to do more menial tasks³⁷. As a result of this, they quickly became a scapegoat and became the target of many protests, strikes, and dissent. The issue was quickly politicized: the working class Democrats denounced the Chinese whereas the Republicans tended to favor them (as Chinese labor was a valuable asset for small businesses).

³¹ “Pest of the Pacific Coast.” Rocky Mountain News (Denver, CO). October 23, 1880.

³² Kanazawa: 779–805

³³ Chin, Gabriel. “A Chinaman’s Chance” in *Court: Asian Pacific Americans and Racial Rules of Evidence* 966-988

³⁴ Ibid.

³⁵ Soennichsen, John. *The Chinese Exclusion Act*. N.p.: Greenwood, 2011. 45

³⁶ Soennichsen: 48

³⁷ Soennichsen: 48



History of the Chinese in Politics

The President of the United States had been Republican since the Civil War, due to the Democrats being blamed for dividing the country and causing the Civil War. The Republican Party supported the Chinese on principle, under the principle of “equality for all”³⁸. However, during the 19th century and especially the 1870s, there was infighting on this topic within the party. Anti-Chinese sentiment grew, and it did not leave legislators untouched. There was a clear split in Republicans - most Eastern Republicans supported the Chinese and equality for all; however, Republicans in the West took more moderate or even left leaning stances, due to a combination of their own growing sinophobia and pressure put on by the threat of reelection and their constituents³⁹. As a whole, anti-Chinese sentiment was much more prevalent in the Western United States than the East, mainly due just to the dispersion of the Chinese across the country - the 1880 US Census estimated 105,465 Chinese residents. Out of these, over 102,000 lived in the West⁴⁰. As a result of this, the East as a whole were neutral on the topic of the Chinese, due to no experience with them.

The 1870s were a time already strife with social and political unrest. The Panic of 1873 affected the entire globe, and as a result many workers in the western United States lost their

³⁸ Zhu, Liping. *The Road to Chinese Exclusion: The Denver Riot, 1880 Election, and Rise of the West*. Lawrence, KS: University Press of Kansas, 2013.

³⁹ Ibid.

⁴⁰ Ibid.



jobs. Chinese workers were mostly unaffected, as a result of their lower average pay and their lack of representation in unions (many labor unions such as the National Labor Union refused to even consider Chinese applicants). As a result, anti-Chinese sentiment rose greatly, and public opinion blamed many societal problems on them. They were portrayed as spineless, conniving, and greedy in the media, as many newspapers (especially democratic ones) posed questions about how the “Chinese Question” and the “pest of the west” could be culled⁴¹.

The 1876 election is arguably the most controversial election ever. The Compromise of 1877, in which Democrats and Republicans agreed to give Hayes the election over Tilden in return for the end of Reconstruction, angered Democratic supporters, who felt that they had been tricked out of the presidency through political machinations⁴². It is to this day one of only two elections in which a candidate has won a majority of the popular vote but not been elected president (the other one being the 2016 election).

Hayes was an unpopular choice for both parties - Democrats thought that he had cheated his way into the Presidency, whereas Republicans felt that he was not harsh enough on the Democrats, especially those in the South, due to his lax Reconstruction policies⁴³. These sentiments carried on and heavily influenced the Election of 1880.

Up until 1880, the Republican Party had attempted to protect the Chinese and fight against anti-Chinese legislation. Especially in the Western US, however, anti-Chinese sentiment was widespread and growing. Political parties such as the Know Nothing Party had much

⁴¹ “Pest of the Pacific Coast.” Rocky Mountain News (Denver, CO). October 23, 1880.

⁴² T. B. Tunnell, Jr. “The Negro, the Republican Party, and the Election of 1876 in Louisiana.” *Louisiana History: The Journal of the Louisiana Historical Association* 7, no. 2 (1966): 101-16.

⁴³ Michael Fitzgibbon Holt, *By One Vote: The Disputed Presidential Election of 1876* (Lawrence, Ks.: University Press of Kansas, 2008), 204-243.



influence and controlled many officials, which caused Chinese rights to be highly restricted, and even in the Republican party, racism was a factor.

However, the Denver Anti-Chinese Riot , which occurred on October 31st 1880, was only two days before the general election, which remains the closest election ever (in terms of the popular vote)⁴⁴. Prior to 1880, the Republican Party had won the previous five elections, and the small disparity in the popular vote was a wake up call to the Republican Party. Garfield had run on a platform which advocated for treaty negotiations and minor reform on Chinese immigration, but was forced to take more extreme measures once he was in office for fear of losing popular support over the issue. Chinese exclusion was relatively uncontroversial - the western United States was as a whole staunchly for it, and the eastern United States was relatively neutral - opposition was mainly on principle alone. The Rocky Mountain News later stated, “The Republicans have gained their candidate but the Democrats will gain their issues... the Chinese must go⁴⁵.”

Causation of the Exclusion Act

These factors all doubtlessly hastened the passage of the Chinese Exclusion Act. However, without the Denver-Anti Chinese Riot of 1880 Chinese Exclusion would not have happened until much later, if at all. A similar bill to the Exclusion Act which would restrict Chinese immigration was proposed in 1878 and was passed by Congress, but was vetoed by

⁴⁴ Zhu, Liping. The Road to Chinese Exclusion: The Denver Riot, 1880 Election, and Rise of the West. Lawrence, KS: University Press of Kansas, 2013.

⁴⁵ Rocky Mountain News (Denver, CO). November 4, 1880.



Hayes⁴⁶. Similar state laws had been passed but had been vetoed by their respective state supreme courts, deeming them unconstitutional, such as in California. The discontent towards the Chinese in America in the 1800s is irrefutable, and the impact that the economy of the 1870s had on the passage of the act is clear. However, the Denver Anti-Chinese Riot of 1880 amplified all of these factors and is a turning point in the Republican view of Chinese Exclusion.

The Riot

All of these issues led to many violent riots against the Chinese throughout the western United States. Especially in California and Colorado, many towns had rioted or enacted new legislation in order to drive all of their Chinese residents out. The most notable of these, due to its unique timing and effect, was the 1880 Denver Anti-Chinese Riot.

The 1880 Denver Anti-Chinese Riot only resulted in one death - a Chinese laundry man was beaten, lynched, and dragged through the streets (this was not due to a lack of violent intention by the mob - the Chinese either hid or fled)⁴⁷. However, it is because of its unique timing and cause which gives it historical significance.

On October 31, 1880, two Chinese men were assaulted in a bar by four intoxicated locals. As they fled, a mob grew, around 3,000 strong, mostly made up of laborers angry at the Chinese

⁴⁸. Colorado was rife with Democrats: it had only just become rushed into statehood in 1876,

⁴⁶ Scharf, J. Thomas. "The Farce of the Chinese Exclusion Laws." *The North American Review* 166, no. 494 (1898): 85-97.

⁴⁷ "The Denver Riot: Additional Details of the Horrible Affair - Murderous Pursuit of the Chinamen and Destruction of Their Property." *Chicago Daily Tribune* (Chicago, IL). November 4, 1880.

⁴⁸ Ibid.



and Democrats had flocked there in 1880 in order to gain its electoral votes, determined to not allow 1880 to be a repeat of 1876.

In addition, a small Democratic newspaper, the *New York Truth*, had published an alleged letter written by Garfield two weeks before the election, in which Garfield promoted cheap labor and gave his support to the Chinese. Although it was later proven to be a forgery, made up by the editor of the newspaper for publicity, the impacts of this “Morey Letter” were immediate and enormous. The working class was enraged. Democratic Newspapers such as the *Rocky Mountain News* seized upon this, and stirred dissent in the general public - the “Morey Letter” was printed on the front page on every one of the three days leading up to the riot, and articles blazed with rhetoric, whipping Denver citizens into a fury: “Down with the Moreys! Down with the Garfields!”⁴⁹⁵⁰. The *New York Times* would later describe the riot “to have been the work of Democratic repeaters and colonists who were imported into Colorado for the purpose of voting fraudulently to-day⁵¹”. The night before had featured Democratic Party marches with heavy anti-Chinese messages, and with the upcoming election, tensions overflowed. On October 31, the mob quickly burst out of control: Denver had under thirty police officers at the time, of which eight were on duty. The National Guard were called, and the riot was eventually quelled on the morning of November 1. However, during this time, the rioters had ransacked nearly every Chinese dwelling and business in Denver, and caused \$53,000 worth of property damage⁵². Nobody would ever be charged, and to this day Denver does not have a distinct Chinatown.

⁴⁹ “Guilty Garfield.” *Rocky Mountain News* (Denver, CO). October 29, 1880.

⁵⁰ “Pest of the Pacific Coast.” *Rocky Mountain News* (Denver, CO). October 23, 1880.

⁵¹ “A Democratic Demonstration.” 1880.*New York Times* (1857-1922), Nov 02, 4.

⁵² “The Denver Riot: Additional Details of the Horrible Affair - Murderous Pursuit of the Chinamen and Destruction of Their Property.” *Chicago Daily Tribune* (Chicago, IL). November 4, 1880.



The damage done by rioters was incredibly devastating to the Chinese community in Denver. However, the true extent of the riot was still yet to be fully seen: the 1880 Denver Anti-Chinese Riot was on October 31st - only two days before the 1880 election. Due to this unique timing, it heavily influenced the Republican party. While all the aforementioned factors were integral in the passage of the act, the Riot highlighted them and brought them to the forefront of the Republican Party's attention. The economic dissatisfaction, the social divide, and the excess sinophobia in the West in general were all emphasized by the riot. As a standalone event, the Denver Anti-Chinese Riot was not entirely significant. However, it reflected perfectly the mindset of the time, a mindset which resented the Chinese for their relative economic success, one which blamed them for prostitution, opium, and gambling, and was xenophobic in general; both Latin Americans and African-Americans faced similar, if less extreme racism. The vision of a racially equal America, which had begun to seem like a possibility after the Union victory in the Civil War, quickly fell flat as the 1876 election ended Reconstruction abruptly and the Chinese Exclusion Act, once again, gave way to white supremacists.

Conclusion

The passage of the Chinese Exclusion Act was an incredibly unique and important event in American history. America, once again, broke from the ideal of a country where "all men are created equal". The Exclusion Act was the first legislation to prohibit immigration by a



specific race, and others would follow suit using the Chinese Exclusion Act as a precedent, such as for the ban on the Japanese during WWII and bans on Muslim immigration today.

Many factors were key in the passage of the Exclusion Act. Pressure from laborers amid an economic panic, along with party infighting and the general unpopularity of the Chinese were all important in pressuring the government and the Republican Party into changing their stance on the issue. However, without effects of the Denver Anti-Chinese Riot of 1880, the Chinese Exclusion Act would have taken much longer to be instated. The Republican Party would have stuck to their principle of “equality for all” for much longer if it were not for the wake-up call provided by the Denver Anti-Chinese Riot. The Denver Anti-Chinese Riot was instrumental because of its unique timing, situation, and the political moves made directly afterwards. Although only one person was killed during the riot itself, it was representative of the growing anti-Chinese sentiment of the western United States as a whole. Its impacts would be monumental in setting the tone of the “Chinese question” for the next decade, as well as setting a precedent for immigration legislation in the future, and would influence many people throughout the United States, working class and government alike.



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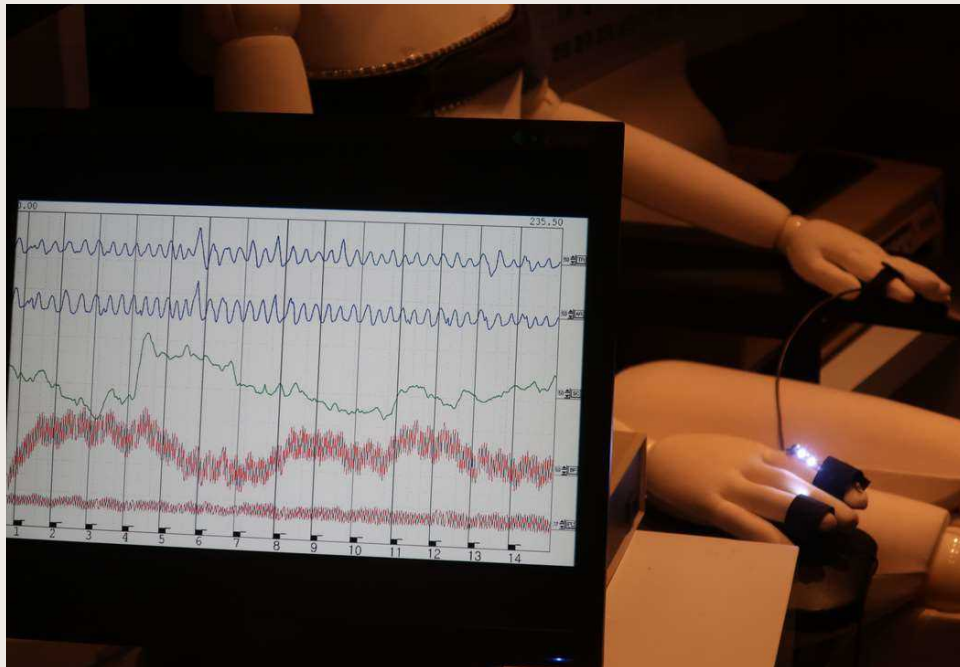
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TO WHAT EXTEND DO CERTAIN INTERROGATION TECHNIQUES PRODUCE A FALSE CONFESSION?



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Introduction

In most western countries a confession is the strongest evidence used to convince a judge of the suspects guilt (Drizin & Leo 2004) . However, it has repeatedly occurred that later proven innocent suspects falsely confess to in most cases accusations of rape or murder. These convicted suspects have usually later been released due to DNA proof that may not have been available at the time of their conviction or in some cases the crime was proven to simply never have occurred (Drizin & Leo 2004). These false confessions can be divided into 3 categories, voluntary false confessions, coerced compliant false confessions and coerced internalised confessions (Kassin & Wrightsman 1985). Voluntary false confessions usually occur when a suspect has a desire for fame or receiving credit for committing the crime, Coerced compliant confessions mean that a suspect is being influenced by an external factor instead of an internal desire to be found guilty. This means that despite the suspect being aware of their own innocence something or someone has influenced them to confess either way (van Bergen, 2008). The definition of a Coerced internalised confession is that a suspect develops a belief they are guilty of the crime (Kassin & Wrightsman 1985) . These are likely due to pressure afflicted on a suspect during questioning (van Bergen 2008).

This essay will focus on coerced compliant and coerced internalized confessions as they are induced through external factors (interrogation techniques) that can be investigated in an experiment. Interrogation techniques (interrogation techniques being the way that the prosecution collects information about a certain event) have in many cases been designed to pull a confession from a suspect however the effectiveness in pulling a confession have been questioned by many scholars on the matter (Forrest, 2012). There is evidence that innocent



suspects tend to give weak and unconvincing performances in interrogations (Kassin & Drizin et al, 2010), whereas guilty/lying suspects tend to be prepared for their interviews and give detailed accounts of events proving their innocence, thus making some interrogation techniques designed to uncover flaws in a suspect's testimony hard to counter for innocent suspects (Granhag & Hartwig 2008).

In a recent meta analysis (Bond & DePaulo 2006) it showed that lie detection techniques correctly distinguish liars from truth tellers on average 54% of the time. Taking into account that 50% would be the expected accuracy rate when deciding guilt or innocence by flipping a coin, 54 % is only 4% higher than chance. Being aware of this apparent flaw in lie detection, it is of uttermost importance that caution is taken in the use of interrogation techniques. This together with the fact that phrasing (language) has shown to affect event recollection (Loftus & Palmer 1974) is a clear indicator of the power that is in the hands of interrogators to pull a false confession. It creates a high risk environment for wrongful convictions which can be enhanced by flawed interrogation techniques.

This essay will discuss the research question “To what extent do certain interrogation techniques evoke a false confession? This question is important as it is in the best interest of the justice system and of the individual to refrain from using interrogation techniques that puts innocents at risk of falsely being convicted of a crime. For a credible justice system it’s important that the guilty are found guilty and the innocent are found innocent. In this essay the discussion will only focus on three interrogation techniques, false evidence, and two alternatives to false evidence, minimization and maximization. False evidence ploys can be defined as the interrogators directly or indirectly claiming to possess incriminating evidence against a suspect in order to increase the pressure to confess (Leo 1995). Maximisation means that the interrogator exaggerates the impact of the crime in an attempt to make the suspect



feel guilty and thus falsely confess (Hartwig, Granhag & Vrij 2005). Minimization on the other hand does the opposite, minimization is an attempt to manipulate a suspect's perception of the impact of the crime. Through this manipulation the interrogator tries to reduce the suspects perception of the severity of the crime in order for the suspect to confess, as the suspect now believes the crime won't have any major consequences and a confession would be an easy way out of an uncomfortable situation (Hartwig, Granhag & Vrij 2005).



False evidence

In a false evidence ploy, the interrogator can claim to possess incriminating evidence, this could be in the form of a non existent video tape of the crime, false claim of having an eyewitness or false technical evidence such as DNA or someone's possession being found at the crime scene (Forrest et al 2012). In many European countries this is no longer allowed however, police can still question a suspect about evidence without directly implying they possess the evidence (Vrij, 1998). The hypothesis is that due to false evidence being presented this can induce both the coerced compliant false confessions and coerced internalised confessions for as Loftus and Palmer (1974) showed in their research that memory could be altered depending on the way the question was phrased. This would imply that presenting false evidence or the way that questions are phrased could to some extent alter the memory of a suspect's recollection of the events which could yield a false confession.

In the study done by van Bergen, Jelicic and Merckelbach (2008) the relation between memory distrust, interrogation techniques and false confessions was investigated. The participants (all college psychology students) were deceived about the aim thinking they had to do a structuring task (organizing forensic case files) when an exam paper was mixed in with the files they were organizing. They were then handed a paper stating that they were from this point on suspected of exam fraud and that they should imagine at the best of their capabilities that they were being interrogated for fraud. A hidden camera placed in the room before the participants entered showed that all the participants were innocent of committing actual fraud. The participants were then presented with several interrogation techniques, in



this study they investigated false evidence, false eyewitness testimony, minimizing, maximizing and suggesting memory failure.

For the condition of false evidence the participants were told there was a tape showing they were guilty, for false eyewitness testimony they were told that someone had seen them commit the crime. For minimization they were told it wasn't important and for maximization they were told this "exam fraud" had massive effects on the teachers responsible for the exams as well as the students. For suggesting memory failure the researcher suggested the participants memory had faltered and they had committed the crime only they could not remember. They then used self report to determine to what extent the participants had doubted their memory or had felt pressured to confess. These scores were compared to a control group who had not been subjected to any form of interrogation. The scores were also compared to the scores of the same participants as they had been subjected to the same test a few weeks in advance for comparison.

An important discovery that the study made, among other things that were discovered, was that false technical evidence evoked a higher number of false confessions than any other interrogation technique. In the control group the tendency to falsely confess was 6.34 (SD = 8.30) whilst with false evidence presented against the participants the tendency to confess was an average of 51.16 (SD 35.49). This means that there is an increase of 806% in the tendency to confess falsely from no interrogation to a false evidence ploy, this clearly shows that this interrogation to a high extent can result in a false confession.

There are some limitations to this study however as the study used self report which has some limitations as it is based on an individual's perception of their own thoughts and this can be prone to some biases such as social desirability bias. Social desirability bias means that a participant may feel like something is expected of them or they can be ashamed about



the results causing them to alter the actual honest answers. Self report can also be influenced by mood of a person on a specific day which can result in a person either understating the answer or overexpressing. Another limitation to this study is its ecological validity, due to ethical considerations participants had to imagine the situation instead of being in a real interrogation where pressure may increase significantly. However it still shows that students with a healthy academic career can be vulnerable to the pressure inflicted upon them to falsely confess to a crime they are aware they did not commit.

Another aspect to real interrogations that this study does not take into account is that the experiment session only lasted for an hour. For real life interrogations this timeframe is rather short, due to the time frame being so short and the participants in this study knew that they would not end up in jail or have to endure an unknown amount of hours of interrogation the ecological validity is low (ecological validity being the extent to which research is conducted in a similar manner as life would in a natural setting, this has can affect the extent to which research findings can be applied to the real world or be generalized). Taking into account that coerced compliant false confessions could occur because a suspect is trying to escape the interrogation or to avoid being taken into police custody, the fact that this was not a problem the participants faced is a real problem when applying the findings of the research to real life situations. Another limitation is that the time between the “incident” and the interrogation about the incident was imminent in this study which it usually isn't as suspects could be questioned after a substantial amount of time has gone by. This study also doesn't address the issue of the phrasing of the questioning to which memory has been shown to be subjective to a certain degree (Loftus & Palmer 1974). There is also an ethical problem as hidden cameras were used of which the participants were deceived about.



Another study investigating the effect of false evidence ploys the study done by Kassir & Kiechel (1996). In this study participants (students from Williams College) were accused of destroying a computer (a crime of which they were innocent) whilst playing a computer game which measured reaction time which the participants were told was the real experiment. Participants were told they weren't allowed to press the Alt key which would crash the computer. The participants were then interrogated about whether or not they had committed the crime, an actor claimed they had seen the participant pressing the key, presenting it in a way that was believable such as "you accidentally hit the key when trying to press another key". Participants were also made to redo the game to show how they pressed the keys and pressured into confessing that they could have accidentally pressed the key even though they did not. Half of the participants were not subjected to the false evidence. It was then investigated to what extent they were willing to confess.

The results were that a total of 69% confessed. This means that approximately 7 out of ten innocent suspects could be pressured into a false confession when presented with false evidence. In a later replication of the study done by Perillo & Kassir (2011) the amount of false confessions were 57%, meaning almost 6 out of ten confessed to hitting the forbidden key, although they were innocent. Showing again that this interrogation technique to a high extent produces false confessions.

There are limitations to this study however as ethical guidelines were not completely followed since the experiment used deception, the participants were unaware of the real aim of the study in an attempt to increase the validity of their actions. Another limitation is the ecological validity as the task, unlike real crime, did not have any severe consequences. This is a clear limitation as in criminal investigations the consequences of being guilty can be severe and longlasting. Another limitation to this study is that the participants were from



Williams college, a private college where an ACT (a US standardized academic test) score of 32 or higher is needed for admission and they charge 50.000 a year in tuition. This means that the participants were upper class and were significantly smarter than the average population as average ACT scores are roughly 20 nationwide. This is definitely a limitation as richer and smarter people tend to be able to afford private representation in their trials which has been shown to have a much lower caseload compared to a public attorney as well as better outcomes for their clients (Hoffman & Rubin & Shepherd 2005). Higher educated people also tend to know their rights and are statistically much less likely to falsely confess. (Gross & Possely & Stephens 2017)

These two studies clearly show that the risk of false evidence ploys resulting in a false confession is much higher compared to control groups.



Minimization and maximization

Minimization is when interrogators either make the crime and its effect seem much smaller or much larger than they are, (Hartwig, Granhag & Vrij 2005) This to manipulate a suspect's guilt or fear in the case of maximization or in the case of minimization it plays to the defendant's lack of fear and guilt and plays to the desire to escape the situation (Hartwig, Granhag & Vrij 2005). In the same study as earlier by van Bergen et al (2008), the effects of minimization and maximization were investigated beside false evidence. The results were that the mean tendency to falsely confess was 28.42 for minimizing and 33.52 for maximizing compared to the 6.38 that the control group obtained. This is significantly lower than false evidence plays however this doesn't mean that minimizing and maximizing aren't still prominent in producing false confessions. There still is an increase of 440% and 520% compared to the control group.

In another study, done by Russano & Meissner et al (2005) investigated similarly to van Bergen (2008) the extent to which minimization and maximization could yield a false confession. The aim of their study was to see to what extent participants would falsely confess to accusations of cheating during another experiment (which they were told was the only aim of the study). This study also used midwestern university psychology students with a mean age of 19.4 years. There were 330 participants which were divided into one of 2 conditions "innocent" or "guilty", which was then subdivided into two conditions, "minimization" or "no minimization", and then again subdivided into "deal" and "no deal" this created a total of 6 conditions. In this study the participants were asked to solve a series



of problem solving questions. The guilty and innocent conditions meant that in the innocent condition the participant was not disturbed however in the guilty condition an actor would ask for the answers even though this was requested in the instructions to the participant to not share answers. In most cases in the “guilty” condition the participant supplied the answer to the actor.

After the interrogations it was investigated which group had the highest amount of false confessions after having been subjected to minimization or no minimization. In the “deal” or “no deal” the participant was then either offered a deal for a lighter punishment or not. The results of the study were that when only minimization was used the rate of false confessions was 18%, the true confessions obtained in that same condition were 81%. The numbers increased significantly for when minimization was used in combination with the offer of a “deal”, then 43% people falsely confessed and the number of true confessions only increased with 5%.

This clearly shows that minimization in itself is by far less dangerous in producing false confessions compared to false evidence ploys, however when a deal was used as is possible in police interrogations the rate of false confessions increased significantly. This is compared to a control group that only falsely confessed 6% of the time whilst true confessions were about 46%. This shows that minimization does increase the rate of true confessions as it doubled however this is the same case with the false confessions doubling however the rate of true confessions were much higher, and the rate of false confessions remained somewhat low. However when a deal was offered this inflated the rate of false confessions significantly without making a significant difference in true confessions.

This study does have some limitations however, although the number of participants were high they still did not represent the group of people that usually end up in hard



situations with the police, these were college students at a large midwestern college aged approximately 19, this is still the same demographic as in earlier studies however it is shown that innocent people of color with a low education level are 7 times more likely to be convicted of the crime as innocent white people (Gross & Possely 2017).

The fact that mainly middle class white students were used for the experiment does pose a problem when generalizing the results to other demographics. A limitation to the study is ethics as deception was used as well in this experiment, however Russano & Meissner (2005) did ask his participants to state whether they considered the violation of the ethics code justified for the scientific findings which only 13% of the participants considered not justified in a survey after the study. The study was also conducted at a university which can lower ecological validity as it was not a situation similar to what suspect can go through with being taken into custody and experiencing the fear of being convicted of something much worse than not doing the experiment properly.

A strength to the study however is the amount of participants, a higher amount of participants makes the results of a study more reliable and shows that it does apply to a larger portion of the population thus increasing the generalizability of the results. Another strength to this study is that it measures the rate of true confessions which is very important not to forget as interrogation techniques are designed to pull true confessions from suspects and false confessions are a byproduct of the attempt at delivering justice. Knowing that many suspects are in fact guilty instead of all innocent as in the studies before this is a strength to this study. As this is an experiment the issue of demand characteristics is also prominent as the participant may figure out the aim of the study and unconsciously alter their behavior. These studies clearly show that there still is an increase in false confessions however by far not as much as in the false evidence technique.



Conclusion

The results of the studies clearly demonstrate the extreme complexity of the subject. It is of uttermost important that the interrogation techniques don't cause a false confession as it is in the best interest of justice to create a system where the guilty are found guilty and the innocent are found innocent. It is important to minimize false information while not compromising true information. There is a significant difference in the amount of false confessions evoked by false evidence ploys VS minimization and maximization. The effects of faltering interrogation techniques where the subjects perception of the possibility of justice is compromised such as false evidence ploys clearly showed to give the highest number of false confessions. In the case of minimization and maximization the numbers aren't as high as false evidence ploys (where up to 7 in 10 suspects could feel forced to confess) however they still show that as many as 2 to 4 people in 10 can be made to falsely confess when subjected to minimization and maximization.

Whether it's 7 or 2 people in ten, this is still an alarmingly high number. What is most prominent in all this research is the vulnerability of innocence displayed as both techniques still produced false confessions. To conclude, the rates of false confessions are higher for false evidence ploys, and minimization appears to be the least harmful and has the potential of giving a true confession as an outcome. However the studies lack ecological validity and diversity in its participants which can make it difficult to generalize the results to everyone who is vulnerable to false confessions. In regard to the question of to what extent certain interrogation techniques produce a false confession these studies show that all three of the



interrogation techniques to some extent have the risk of producing a false confession. It was clearly shown in van Bergen et al, (2011) and Kassin and Kiechel (1996) that false evidence ploys have a significantly higher risk of producing a false confession compared to other interrogation techniques. In the case of Minimization and Maximization van Bergen et al (2011) and Russano and Meissner et al (2005) clearly showed that just like false evidence ploys the risk of false confessions was still very much there even if it was on a smaller scale. To conclude this complex issue is far from solved, however the results from these studies indicate that relative to minimization, false evidence ploys do to a larger extent evoke false confessions.



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