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The AUC Undergraduate Journal of Liberal Arts and Sciences is a biannual, interdisciplinary publication showcasing outstanding undergraduate academic papers. The Journal aims to demonstrate the strength of undergraduate scholarship at AUC, to reflect the intellectual diversity of its academic programme, to encourage best research and writing practices, to facilitate collaboration between students and faculty across the curriculum, and to provide students with opportunities to gain experience in academic reviewing, editing and publishing. The editorial board of the journal is constituted of members of the InPrint board, a registered AUCSA committee.

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Foreword

InPrint was founded in 2012 as an opportunity for students of AUC to showcase their academic efforts beyond the classroom setting. There is no doubt the students at AUC work hard; the academic building is packed every day of the week with people writing essays, studying for exams, preparing group presentations, and more. It would be a shame if all this dedication remained unnoticed. Therefore, InPrint has made it our mission to show the world what AUC students can do.

In the fall, following the excellent example of previous InPrint boards, we published the Capstone Issue of 2018, which demonstrated the grit and care of the third years' bachelor theses. In this journal, we opened up submissions to everyone at AUC, giving students of all backgrounds, educational levels, and backgrounds the opportunity to present their work. Together, we revised and edited their academic essays, which came from every major and a variety of tracks. We included faculty input in order to ensure a well-rounded, high caliber final product. Our journal is a selection of some of the best essays written this year, with topics ranging from desalination in the United Arab Emirates to Australian immigration to Frankenstein. We hope you enjoy!

Contents

Sciences

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Environmental Impacts of Desalination Plants in the United Arab Emirates

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Iqra Nowshari

Introduction

The United Arab Emirates, particularly Dubai, is known for being a popular tourist destination, boasting sights such as the Burj Khalifa, Burj al Arab, the Dubai Mall and countless other attractions in this luxurious desert oasis. The rapid industrialization and urbanization in Dubai brought with it an increase in the demand for fresh water, which in an arid region like the UAE can only be provided by groundwater resources or the use of desalination plants. However, natural groundwater resources (e.g. aquifers) were eventually unable to meet the growing freshwater demands of households and industries (Murad 2010). Desalination is the process of removing salts from saline water in order to produce fresh, potable water (USGS 2016). Desalination techniques have been used historically, most notably on ships to convert seawater into drinking water during long voyages, with the first mentions of desalination processes recorded by Aristotle in 320 BCE (USGS 2016; Baawain et. al. 2015).

In the UAE, the use of desalination plants became increasingly prevalent in the 1990s, with an overwhelming majority of plants in the Gulf region using thermal or membrane processes (such as Multi Stage Flash, MSF or Multi Effect Distillation, MED), whereas the prevailing technology worldwide is reverse osmosis (RO). This is mainly due to the fact that the characteristics of the Gulf require costly pre-treatment for the RO process, whereas the availability of cheap gas makes thermal technologies more cost efficient (Latteman and Höpner 2008, Saif 2012). Desalination plants are also usually combined with power plants that generate electricity using fossil fuels (oil and natural gas); however, this paper will focus mainly on environmental impacts associated with desalination of seawater rather than electricity generation.

The environmental problems caused by these desalination plants are mainly the detrimental effects to water quality and biodiversity in the Arab Gulf due to the brine and chemical discharge as well as the harm caused to marine life due to the intake of seawater (i.e. in piping). Furthermore, the high demand for heat and electricity, provided by fossil fuels, causes a release of air pollutants to the atmosphere. This paper aims to assess the environmental impacts of the process of desalination and will further evaluate policy measures taken by public and private stakeholders in minimizing this environmental damage. The methodology used to do this is the so-called DPSIR (Driver-Pressure-State-Impact-Response) framework, in which the *Drivers* are activities or processes that act as driving forces within society that apply *Pressures* on the environment that then cause a change in the *State* of

the environment, resulting in *Impacts* on human welfare and the measures taken by society as *Responses* to reduce these impacts (Boersema and Reijnders 2009). This research was conducted through the use of a literature review found through the UvA library and Google Scholar database, as well as contemporary sources on the topic found online.

Case description

As mentioned earlier, the possibility of sourcing potable water from groundwater aquifers in the UAE has decreased greatly since the end of the 20th century. With decreasing groundwater availability due to low recharge rate, there is a gradual increase in dependency on desalination technologies. Furthermore, 75-85% of groundwater that is produced from aquifers in the UAE is used for agricultural purposes, of which a startling 30% is lost in piping system failures (Baawain et. al. 2015). Considering this lack of conventional water sourcing, it is unsurprising that 77% of all desalination plants on Earth are situated along the Arabian Gulf, with a total seawater desalination capacity of around 11 million m^3/day. The main producers of potable water through desalination in the Gulf are the UAE and Saudi Arabia, with the UAE possessing a potential of 26% of the world's seawater desalination capacity (Latteman and Höpner 2008). The Arabian Gulf is a relatively small and semi-confined body of water sharing coastlines with the UAE, Qatar, Saudi Arabia, Kuwait, Iraq and Iran. Due to limited precipitation in the region and narrow straits to larger bodies of water, it takes approximately three to five years for the water in the Arabian Gulf to be naturally flushed out (EICON 2009). The Gulf is also salty and warmer than most bodies of water by nature, and the close proximity of desalination plants to each other and the shallowness of the water along the coast intensifies these characteristics, i.e. the water in the Gulf is becoming saltier and warmer (Baawain et. al. 2015). Salinity measurements in the Gulf have risen from 32 000 parts per million in 1980 to 47 000 parts per million in 2010 (Alderman 2010).

Figure 1 below shows the DPSIR framework that was applied to this environmental problem. The main driver is the growing demand of freshwater by households, industries and agriculture, with indirect drivers being population and economic growth. Moreover, the UAE's focus on promoting tourism creates added pressures on freshwater production; e.g. the predicted quantity of water used for tourism in Abu Dhabi was 1305 million gallons in 2015, and this demand is still rising as more tourists visit the UAE (Murad 2010). The brine and chemical discharge released by desalination plants vary depending on what

kind of process is used; however, it is usually double the salinity of ambient seawater (Saif 2012). Since MSF is the predominant technology used in the Gulf, it is worthy to note that brine discharge from MSF plants is not only highly saline, but also up to 5-15°C warmer than the Gulf's average sea temperature (Dawoud and Al Mulla 2012). These changes in water salinity and temperature can adversely affect marine life in the Gulf. While most organisms in the Gulf are naturally accustomed to high temperatures and salinities, they will not be able to withstand extreme conditions, and overexposure to such extremes can be fatal. The hypersaline brine may affect seafloor-dwelling organisms in particular; this is because the brine discharge has a higher density than unprocessed seawater, and when it sinks to the sea floor it could disrupt seagrass, mangrove and coral populations. When corals are exposed to high temperatures, it can cause the phenomenon of coral bleaching followed by death. Similarly, hypersalinity can cause stunted growth or death of mangroves (Saif 2012). If the brine discharge isn't denser than water, aquatic species residing higher in the water column will be affected. Furthermore, small organisms can get impinged or entrapped in the sea water uptake pipes (Latteman and Höpner 2008). Another risk to marine life is a decrease in dissolved oxygen in water. Increased salinity and temperature leads to a decrease in dissolved oxygen, which is also essential to marine species and is a good indicator of water quality (EICON 2009).

Figure 1. DPSIR framework concept map applied to desalination plants in the UAE. Retrieved from http://www.grida.no/resources/8124

Responses

Over the course of the years, research into desalination technologies has been used to mitigate the environmental impacts of desalination plants. These developments in technology have been partly driven by the desire to decrease the costs of desalination plants, primarily by decreasing energy consumption (Baawain et. al. 2015). Recent developments on the use of renewable energies in desalination has attracted attention in Gulf countries and several small scale photovoltaic solar energy powered desalination plants that use reverse osmosis processes (PV RO) have been constructed in Abu Dhabi (Dawoud and Al Mulla 2012). Other Gulf states, such as Qatar, are also investigating the use of solar energy in desalination technologies (Baawain et. al. 2015). To reduce the impacts on the marine ecosystem in the Gulf, there have been few improvements in brine disposal and water uptake. To decrease the impact of the brine solution released back into the sea, the brine can be cooled and diluted in seawater or cooling water from the power plant (Latteman and Höpner 2008). A promising facet of research into brine treatment involves a chemical reaction with carbon dioxide and ammonia that results in useful solid product (sodium bicarbonate) and brackish water that can be used for irrigation purposes (Baawain et. al. 2015; Dawoud and Al Mulla 2012). In terms of improvements in water uptake, Latteman and Höpner hypothesize that moving uptake pipes further away from the coast will increase water quality and decrease interference with organisms dwelling close to the coast. Additionally, reducing the strength of intake and using more suitable screens could assist in the reduction of impingement and entrapment of aquatic species. Finally, regional efforts to regulate marine pollution in the Gulf were attempted in 1979 through an organization called the Regional Organisation for the Protection of the Marine Environment. The World Health Organization (WHO) has also taken the first steps to creating formal requirements for environmental impact assessments (EIA) with supplementary research being conducted by the MEDINA project (Baawain et. al. 2015; Latteman and Höpner 2008).
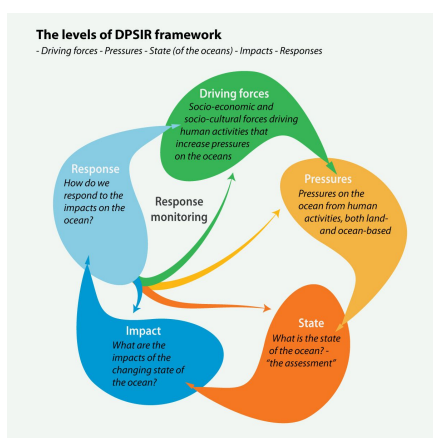
Evaluation

While the aforementioned responses seem to head towards a more sustainable future in water management solutions in the Gulf, the realistic implementation of these responses are hindered by various factors. The use of PV RO processes in desalination, although promising, brings with it very high costs for PV cells and for batteries to store the power. PV RO plants would also be costly to maintain; for this reason, PV RO technology has not received much attention from investors (Baawain et. al. 2015). Additionally, RO is unable to cope with very high concentrations of salt - the higher the salt content, the greater the energy required to desalinate it. This raises the concern for a time when no technology may be able to cope

with the hypersalinity of the Gulf, or "peak salt" (Todorova 2009). To evaluate the response dealing with water uptake pipes, there is evidence that better mesh screens would be beneficial to marine organisms; however, if the pipes were to be relocated to deeper in the sea, there would be more harm done in initial construction of the pipes. The quality of water taken in would, however, be improved (Latteman and Höpner 2008). It is important to note that although scientists are focusing on sustainability, their research is of little to no good without substantial support by regional or national stakeholders. Any drafted government or organisational approaches to solve environmental problems caused by desalination have proven ineffective and have lacked proper implementation, ROPME included. As for the research conducted by the WHO and the MEDINA project following it, it seems as though no conclusive measures have been enforced. Also, it is unclear how reliable some measured data can be; in an EIA of the Jebel Ali desalination plant written by a group called the Environmental International Consultants, there seemed to be a general lack of environmental concern. The impacts on air quality, water quality, and impact of brine were deemed either "insignificant" or "minor", with claims of either technological advances or claims that emissions were "under stipulated standards of the Dubai Municipality" (EICON 2009). While further research into this specific desalination plant was not conducted, it is questionable how "insignificant" or "minor" these environmental impacts truly are.

Conclusion

To conclude, while technological advancements and research therein are promising, there seems to be a lack of governance on the state of the Arabian Gulf and the future risks desalination may pose on water scarcity. In order to effectively implement policies to solve pollution caused by desalination, there must be a standard and strict procedure to assess the environmental impacts of each plant along the coast, and ideally there should be an overarching organization to synthesize this data, come to conclusions on the state of the Gulf today, and effectively make accurate predictions on the state of the Gulf in the future. There needs to be an integrated and cooperative approach between Gulf states in order to determine the best and most sustainable practices to source freshwater as well as reduce unnecessary use of freshwater. The Gulf states should consider limiting their water consumption in the agricultural sector or greatly improving its efficiency; after all, using a majority of freshwater for agriculture in an arid/hyper-arid climate like the Gulf is unwise and places very high pressures on limited freshwater resources. There should also be improved communication between scientists, policy makers and national governments. Further research should also be conducted on the exact impacts this hypersaline water can have on aquatic life, and whether there is a possibility that hypersaline water affects the coastal ecosystem's natural trophic cascade.

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Sciences

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Recombining Sex;

An overview of the impact of recombination (suppression) on the evolution of
sex-determining mechanisms, in particular, the human X, Y-system
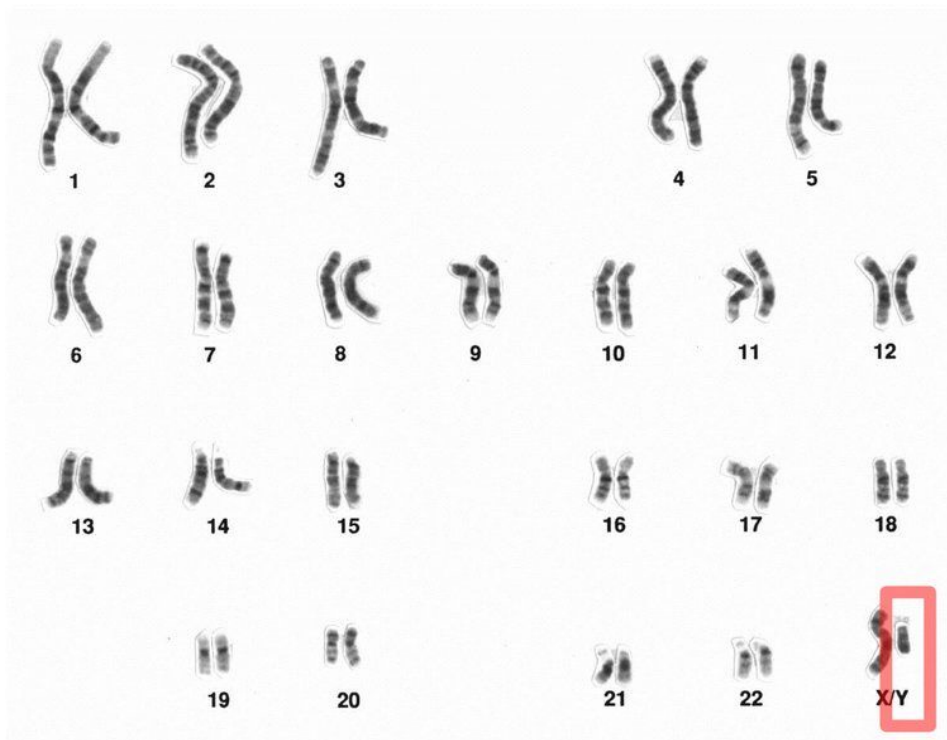
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Jessica Tiron and Thijs Vromen

Figure 1: A karyogram of the human genome. In the red box the reduced, and thus way smaller, sex-determining human Y-chromosome next to the X- chromosome. Retrieved from: https://phys.org/news/2018-01-chromosome-men.html

Introduction

A recent study has shown that almost 97% of the genes on the Y chromosome found in humans have undergone an extensive degradation process over the past millions of years, with only 3% of the ancestral genes remaining functional now (Bachtrog 2013). It is thought that this situation arose from a lack of recombination between the X and Y-chromosomes. An important reason this recombination suppression was selected for, is that combining genes that encode for female and male traits onto one chromosome could lead to, for example, infertility (Marais and Galtier 2003).

Various studies investigated the characteristics that make a sex-chromosome different from autosomes: their heteromorphism in both size and genetic information. Thoroughly studied as well is the recombination process, which is a genetic process in which homologous chromosomes pair and exchange DNA sequences. Also well-known is how this process can lead to genetic diversity in the offspring, subsequently aiding the removal of deleterious mutations via increased efficiency of natural selection. However, a research gap remains concerning how the suppression of this mechanism influenced the development of the different sex-determining mechanisms. A sex determining mechanism is what leads to the development of an organism producing egg cells as gametes (female), sperm cells (male), or both (hermaphrodite). These mechanisms are usually divided into two groups: those that are determined genetically like in humans and those that are determined by environmental factors such as in many reptiles whose sex is determined by the temperature eggs are exposed to pre-hatching (Bachtrog et al. 2014; Uller and Badyaev 2009). This paper is a literature review drawing on previous research to examine both the recombination phenomenon and the distinct types of sex-determining mechanisms. In essence, its aim is to link the rate of recombination and the consequences it has on the evolutionary development of the different sex-determining mechanisms, especially in the sex chromosomes found in humans.

Recombination and its impacts

Recombination is one of the most important processes taking place during meiosis, it is caused mainly by processes essential for correct division of the chromosomes in the gametes and is itself essential in shaping genome variation. Only homologous chromosomes can switch DNA sequences by either breaking and (re-)joining or by copying segments, whenever a physical connection is established between the chromatids of a bivalent chromosome with

another non-sister chromatid (Roeder 1990). Because of this switching of DNA sequences, the offspring inherits novel allele-combinations on their chromosomes. This diversity, in turn, increases the efficiency of selection as the most effective allele can be selected for, independently from other alleles on the original chromosome. Recombination does happen between the X-chromosomes, but not between X- and Y-chromosomes, decreasing the efficiency of natural selection of genes on the Y-chromosome (Alves et al. 2017).

When recombination occurs between homologous chromosomes, it endorses DNA break repair, genome integrity, and deletion of aberrant mutations (Alves et al. 2017). Conversely, when this machinery is being suppressed, complications leading to infertility are more likely to arise over time over time. Moreover, the absence of this machinery securing the genome's integrity and less effective natural selection in the absence of recombination will increase the mutation load (Figure 2), and as a result, the function of genes can get impaired or lost completely, which may lead to congenital birth defects (when it doesn't lead to infertility, that is) (Roeder 1990).
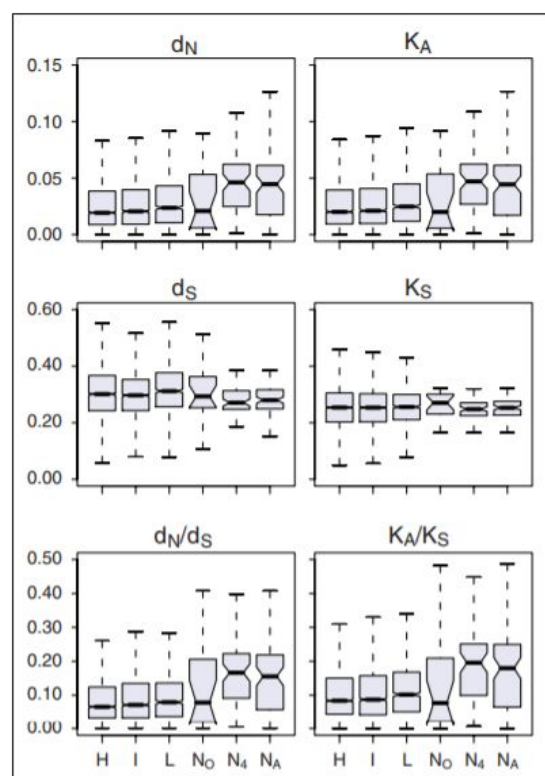
Figure 2: This graph shows the impact of recombination on natural selection. Higher d_N/d_S rates reflect less selection because it indicates that the, usually deleterious, nonsynonymous mutations are removed at a lower rate. H, I and L represent regions where recombination is present, No N4 and NA where there is none, of which NA represents the average of all non-recombining regions. If the notches of two boxplots do not overlap there is a difference between the medians significant at the 5% level. Most important

The relationships between sex-determining mechanisms

Often, sex-determining mechanisms are divided into two main groups, genetic and environmental mechanisms, with many variations of both types. Human somatic cells have forty-six chromosomes consisting of twenty-three pairs. There are twenty-two pairs of autosomes and one pair of sex chromosomes - XX for females and XY for males. The mechanism, in this case, differentiates between male and female by inducing a difference in phenotype, for example in behaviour and metabolism (Hake 2008; Marais and Galtier 2003). This XY-system is, however, not universal. In insects and a few mammals, for example, the XX – XO system is quite common. Females have two copies of the sex chromosome whilst males only have one. A similar option is a system of sex determination where females are diploid and males are haploid. A third type, the ZW system, which is common in many birds and some reptiles, is similar to the XY-system, but instead of a 'male-only' Y-chromosome, it has a 'female-only' W-chromosome. Consequently, females have two types of sex chromosomes (Z and W) and the males have two copies of the Z- sex chromosome. For some species, for example, many reptiles, the sex is not determined genetically, but by environmental factors. For many species of turtles and crocodiles, for example, the sex of the embryo is determined by the incubation temperature during a window of the incubation period (Bachtrog et al. 2014). Even more fascinating is that sometimes environmental factors can completely overrule genetic determination; some *Wolbachia* bacteria can turn a genetically male host organism into a phenotypic female (Werren et al. 2008).

The evolutionary relationships between the different types of sex-determining mechanisms are not yet entirely clarified and maybe even more complicated than previously anticipated due to multi-factored mechanisms, but there are some common hypotheses (Abbott et al. 2017). It is most commonly hypothesised that the ancestral modus of sex-determination was genetic (Janzen and Phillips 2006). The difference between XY and ZW systems is then explained by 'chance': the ancestral XY system happened to attain a gene on the neo-Y-chromosome giving the organism a 'male' phenotype and the ancestral ZW system a gene on the neo-W-chromosome determining the organism's sex as female. The XX-XO system is hypothesised to have been an XY system where the Y chromosome completely degraded over evolutionary history (this process of degradation is discussed later in the paper)(Abbott et al. 2017).

Since environmental sex determination typically does not involve suppression of recombination, it is important to find out what the relationship between genetic and environmental sex determination is, in order to help hypothesize whether recombination suppression has played any role in the evolutionary history of environmental sex determination (Janzen and Phillips 2006). There are several hypotheses for the origin of sex determination through environmental factors. Possibly, these originate from, for example, an XY system with a mutation making the sex-determining gene temperature dependent (Janzen and Phillips 2006). However, it is also proposed that sex-chromosomes are actually an evolutionary 'dead-end'. This would be because the differentiation and lack of recombination between the sex chromosomes mean they cannot return to a homologue state. This suggests that sex determination via environmental factors actually evolved separately from, or even before, genetic sex determination (Janzen and Phillips 2006). Finally, it is important to note that for example Uller and Helanterä (2011) and Uller and Badyaev (2009) state that the mechanisms are very fluid and in many cases may actually involve both genetic and environmental factors, further complicating previous hypotheses depending on a binary view on genetic and environmental sex determination. Because the relationship between genetic and environmental sex determination remains opaque, it is at this point in time not possible to extrapolate any of the impacts of suppressed recombination in genetic sex determination to the evolutionary history of environmental sex determination.

The development of the human Y-chromosome

The development of the human sex chromosomes follows four major steps (Johnson and Lachance 2012). At first, an autosome of a homologous pair gains a mutation that is sex-determining. In humans this is the SRY-gene, that is so-called 'testis forming' (meaning that if this gene is present the embryo will develop testes rather than ovaries). Subsequently, this chromosome may gain other genes that are sexually antagonistic: they have a very positive effect on one sex, but deleterious effects on the

other. This difference in impact on the sexes is often related to sexual selection. Examples of sexually antagonistic genes in humans are genes that are involved in the development of secondary sex characteristics. However, for these genes to have a positive impact on the population as a whole, it is vital that they are restrained to one sex only (Mank 2012; see figure 3).
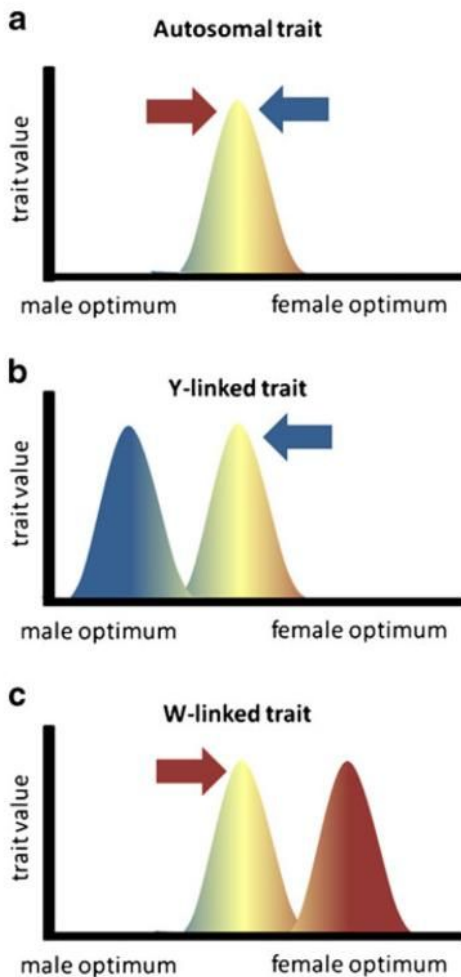

Figure 3: At an autosome a gene needs to be beneficial to both male and female, meaning it will be at the optimum for neither sex (a). When a gene is linked to a chromosome only recurring in males (Y-linked) or only in females (W-linked) it can adapt to the optimum to that specific sex, since there is no selection pressure from the other sex. Mank (2012) .
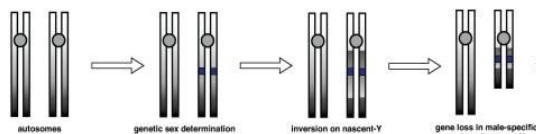
Figure 4: A simplified representation of the steps in the evolution of human sex chromosomes. Johnson and Lachance (2012).

This gives rise to a selection pressure favouring mechanisms inhibiting recombination between the (neo-)

sex-chromosomes. The most important of these mechanisms is that of inversion, where a part of a chromosome is inverted, meaning that the homologous genes on the two 'homologous' chromosomes no longer align, preventing successful recombination (Marais and Galtier 2003). Once this has taken place, more sex-specific genes can be accumulated in the non-recombining regions of the sex chromosomes.

However, because of the lack of recombination, the selection pressure on other mutation in the non-recombining region is also diminished, meaning that over time deleterious mutations and repetitions will also accumulate on the chromosome. This is due to selection-inhibiting processes such as 'hitchhiking'; because there is no recombination, it is no longer possible to select for individual alleles, but instead selection concerns the complete inverted region (or even chromosome). That means that deleterious mutations can 'hitchhike' along with the rest of the chromosome if the chromosome as a whole still has a genome beneficial for the fitness of the organism (Haddrill et al. 2007).

The loss of recombination also gives rise to the process of chromosomal degeneration, that finally leads to the heteromorphic character of sex-chromosomes. The selection pressure is lacking, therefore large parts of the chromosome lose their function due to mutations and can subsequently be deleted from the genome without further impacts. When this process persists over considerable evolutionary time (millions of years), it will lead to a diminutive sex-chromosome, such as the human Y-chromosome (Bachtrog 2013).
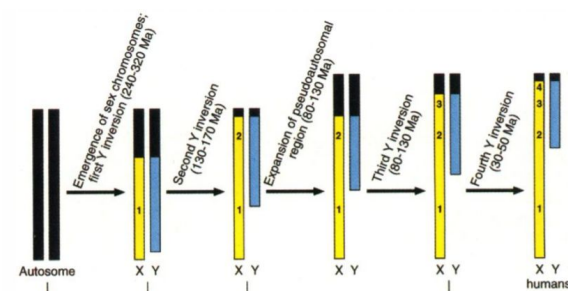
Figure 5: Evolution of the human Y-chromosome. This figure shows the proposed inversion events and indicates at what times in evolutionary history the ancestral line of our sex-chromosomes and that of other groups split. (Lahn and Page 1999).

Almost the entire human Y-chromosome has been inverted, leaving only a tiny pseudoautosomal fragment on one of its ends (Figure 5). This is not due to a single inversion of almost the entire chromosome, but by four

inversion events interspersed by periods of chromosomal degradation (Lahn and Page 1999). These inversion events were 'discovered' by comparing homologous genes on the human X- and Y-chromosomes. Lahn and Page (1999) propose that, because recombination leads to genetic homogeneity between chromosomes, the level of heterogeneity of these homologue genes would be an indication of how long ago the recombination in those areas ended. They identified 4 different 'groups' of homologous genes based on their Ks value. This Ks value represents the mean number of substitutions for which the substitution does not change the transcribed protein (synonymous substitution) per site that is (otherwise) synonymous on both chromosomes. Lahn and Page (1999) found that the Ks values clustered into four groups, for which groups with fewer substitutions (4) and thus more similar have started diverging more recently than those with larger differences in their DNA (1), as can be seen in table 1 and figure 5.

Gene pair	K_S	K_A	K_S/K_A	DNA divergence (%)	Protein divergence (%)	Sequence compared (nucleotides)
Group 4						
GYG2/GYG2P*	0.11	0.06	1.8	7	12	525
ARSD/ARSDP*	0.09	0.07	1.3	7	13	846
ARSE/ARSEP*	0.05	0.04	1.2	4	9	615
PRKX/Y	0.07	0.03	2.3	5	8	1020
STS/STSP*	0.12	0.10	1.2	11	18	852
KAL1/KALP*	0.07	0.06	1.2	6	12	1302
AMELX/Y	0.07	0.07	1.0	7	12	576
Group 3						
TB4X/Y	0.29	0.04	7.3	7	7	135
EIF1AX/Y	0.32	0.01	32	9	2	432
ZFX/Y	0.23	0.04	5.8	7	7	2394
DFFRX/Y	0.33	0.05	6.6	11	9	7671
DBX/Y	0.36	0.04	9.0	12	9	1932
CASK/CASKP*	0.24	0.22	1.1	15	32	156
UTX/Y	0.26	0.08	3.3	12	15	4068
Group 2						
UBE1X/Y	0.58	0.07	8.3	16	13	693
SMCX/Y	0.52	0.08	6.5	17	15	4623
Group 1						
RPS4X/Y	0.97	0.05	19	18	18	792
RBMX/Y	0.94	0.25	3.8	29	38	1188
SOX3/SRY	1.25	0.19	6.6	28	29	264

*Y copy is pseudogene. DNA and protein divergence refer to uncorrected nucleotide (coding region) and amino acid divergence (nonidentity).

Table 1: data used by Lahn and Page (1999) to determine the different groups of homologous pairs indicating the four inversion events. The data was obtained via (shotgun) sequencing.

Using synonymous, or silent, substitutions to determine the time of divergence is a common practice, because, unlike with non-synonymous mutations (in table 1 shown under 'Ka'), the synonymous mutations are not subject to selection, meaning they can simply accumulate over time (Lahn and Page 1999). This also explains why the values for Ka, and to a lesser extent even the percentage of DNA divergence between the homologs, is not necessarily divergent between the groups. The idea that the inhibited recombination is due to inversions, instead of other recombination-inhibiting changes to the DNA, can be derived from the distribution of the homologous genes in the non-recombining regions of the sex chromosomes; on the X-chromosome the homologues are neatly ordered, per

group, from 'old to young' (Figure 6), whereas on the y chromosome they are scrambled. This suggests that the inversions indeed took place in the Y-chromosome, which is reinforced by the fact that the boundary of the pseudoautosomal region is formed by a gene that is intact on the X-chromosome but strongly disrupted on the Y-chromosome (Lahn and Page 1999).
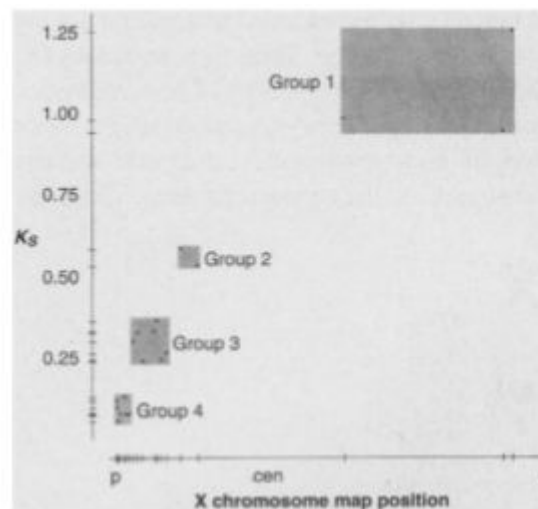
Figure 7: Plot showing the correlation between Ks and location on the X chromosome. Lahn and Page (1999).
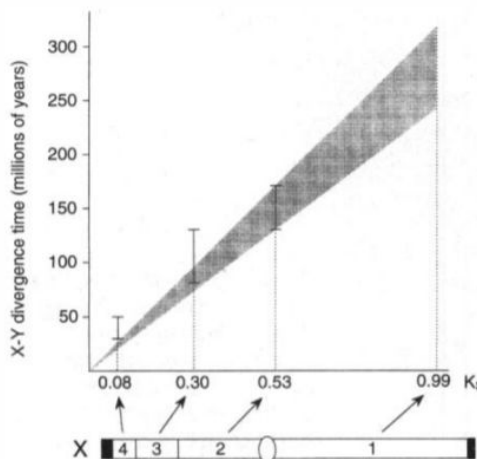
Figure 6: The average Ks values of the four groups are used to determine the age of the inversion events. Higher Ks indicates a longer period without recombination. Lahn and Page (1999).

Conclusion

A variety of sex-determining mechanisms exist, usually categorised as either genetically or environmentally determined and those that are genetically determined are clearly impacted by (a lack of) recombination. Recombination is a vital process in meiosis, partly because it increases the effectivity of selection on the gene level through reshuffling the chromosomes. This paper found

research employing sequencing methods to compare dN/dS ratios of homologous genes on the X- and Y-chromosomes, which has shown that recombination has been suppressed between X- and Y-chromosomes due to four inversion events. This lack of recombination enables not only sex-specific genes but also deleterious mutations and repetitions to accumulate on the Y-chromosome and led to the degeneration of this chromosome. Recent research has shown that sex determination is more complicated and fluid than previously thought, further complicating what the relation between genetic and environmental sex determination is. Because of that, this paper could not clearly identify whether there has been an impact of recombination suppression in the history of environmental sex determination. In the future, it may be useful to delve deeper into the evolutionary relations between different types of sex-determination, because a better understanding of these relationships may help inform us whether recombination suppression played any role in the evolutionary history of environmental sex determination.

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Social Sciences

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Said Imasi, the securitization of immigration, and Australian fear

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Ailsa Traves

Retrieved from: https://asia.nikkei.com/Politics/Australia-cuts-immigrant-intake-by-15-ahead-of-election

Introduction

Australian refugee policy has been widely criticized, both internally and externally, for its extremely strict and harsh nature. The United Nations (UN) has repeatedly condemned the country's approach to processing asylum seekers and refugees, asserting that Australia commits major violations of human rights policies and urging for the evacuation of their offshore processing centres (United Nations Human Rights Council, 2018 (1)). This paper will focus on the case of Said Imasi, a stateless person who has been detained by Australia for the past eight years without trial or process, and with no apparent plans to change this. Stateless persons present a unique challenge in a globalized world as they lack the protection of a home state, and thus are more vulnerable to violations of their rights.

In this paper, Imasi's case will be primarily viewed through the lens of the securitization of immigration. The case will be summarised and then theoretically examined, followed by a more general examination of Australian investigations. The securitization of immigration in Australia is extreme, often framing the refugee or asylum seeker as a criminal. This conflation can be examined through the application of risk society theory, as well as its relation to Australian invasion anxiety and fear. The global implications of this case will then be considered. Globalisation has affected the way statelessness is experienced, and Imasi's case demonstrates how the increasing securitization globally means that a method of intervention beyond state-based systems perhaps should be considered.

Case overview

Within this paper, a stateless person will be defined as 'a person who is not considered as a national by any State under the operation of its law' (United Nations Human Rights Council, n.d.(2)). Said Imasi does not have a known place of birth, although he believes he was born in the Canary Islands in 1987 (HRC Working Group on Arbitrary Detention, 2017). He has no known birth certificate or identity documents that provide him with a citizenship or nationality. Imasi lived in various refugee camps across West Sahara or Algeria until he was approximately six, at which time he was moved to Europe likely through a human trafficking process. For several years, he worked as an unpaid laborer in Belgium. After this, Imasi moved to the Netherlands and lived in a refugee camp, where he became involved in gang activity. While spending several years in Norway, Imasi remained connected to this gang despite attempting to estrange himself; he reports being threatened with violence. He attempted to escape his persecution in Norway by flying via Abu Dhabi to Australia and claiming asylum there, citing said violence and the failure of Norwegian authorities to adequately protect him (Ibid.).

When Imasi arrived in Melbourne's Tullamarine Airport on the 28th of January, 2010, he was detained by the Department of Immigration and Border Detention; by his own account he was not shown any form of warrant or verifying documentation. Since this point, Imasi has been held in detention. He has been transferred at various points between the Maribyrnong, Villawood, Christmas Island and Yongah Hill detention centres.

Imasi's last reported location was the Christmas Island Detention Centre, which closed earlier this year. It is reported that he suffers from severe depression and suicidal tendencies (HRC Working Group on Arbitrary Detention, 2017).

The securitization of immigration

Anthony Burke, a prominent writer in Australian security studies, writes that security in Australia, "…whatever its dramatic historical permutations, has rested on a single, persistent, violent drive for sameness." (Nyman, Burke, & Burke, 2016, p. 146-147). Through a history of anti-convict, anti-indigenous, and anti-nonwhite policies, Australian society has continued its pursuit of this homogeneous ideal (Burke, 2008, p. 18-22). Despite multiple violations of international law, asylum seeker and refugee policies are justified through a discourse of safety, particularly anti-crime and anti-terror discourse (Pucci & Pauline Hanson's One Nation, 2018) (Liberal Party of Australia & Hirst, 2018; Carroll & Australian Labor Party, 2018). Said Imasi's continued detention demonstrates this.

"Crimmigration" can be defined as the conflation of criminal and immigration law (van Berlo, 2015, p. 78). The conflation of criminal and immigration law is clear, particularly through the Operation Sovereign Borders, which combines border security with military forces and tactics, and was launched in 2013 (Ndholvu, 2018, p. 291-292).

The Other

Immigration policy, particularly in the island nation, relies on a 'keep them out' ideal. Tony Abbott's infamous 'Stop the Boats' campaign typified this approach, and is continued to this day (Abbott, 2013). As Burke writes, "the ontology that fuses security and the nation-state is one based on enclosure, separation and exclusion, with violence and threats as ways of protecting and performing a political

structure of identity and existence." (Nyman, Burke, & Burke, 2016, p. 150). The idea of security and the concept of Australia as a stable place are so strongly interwoven that this is 'justifiably' and 'necessarily' performed through violent action and extreme policies. For example, as a matter of policy, upon arrival asylum seekers experience a period of (often offshore) detention; usually longer than what they would experience in other nations, and under particularly harsh conditions (United Nations Human Rights Council, 2018 (1)). These conditions include poor medical treatment, high rates of suicide, and sexual abuse (Refugee Council of Australia, 2019)

Boats have historically been turned away at the edge of Australian maritime waters. Former Prime Minister Malcolm Turnbull once stated of the nation's border security policies, "If we don't take a firm line, we know what the consequences will be. This is not theoretical." (McMah, 2016). Here, he was specifically suggesting that if Australian policy is not strict, it's unknown how many people smugglers will take advantage of that fact and bring more illegitimate asylum seekers and refugees to the border; this despite the fact that other pathways for asylum seekers are often difficult or impossible (Wazana, 2004, p. 84). He is also referring to how, after Former Prime Minister Kevin Rudd closed the offshore Christmas Island detention processing centre, arrivals increased, which he did not want repeated (Doherty, 2017). The arrival of just four 'illegal' maritime vessels after the policy was put in place remains a point of pride for the Liberal Party, despite the fact that this statistic is due to the turning back of boats at the maritime border to other neighbouring islands (Ibid.). For the sake of security, then, policy must be strict, or more arrivals will occur; more Others will arrive, more criminals will breach the shores. Australia frames security in a way that discourages Otherness.

Fear, and the conflation of immigration with criminality

Fear and anxiety comprise a major component of anti-immigrant sentiment in Australia, and are an clear way to frame this culture. In his paper *Multiculturalism is not difference* (2001), Seth writes that "Plurality will be tolerated only up to the point that it does not seriously conflict with a social order premised on institutions and values which reflect the dominant culture" (p. 71). In other words, multiculturalism only tolerates difference up to a certain point, however how high the level of difference is that can be tolerated is reducing particularly under such restrictive policies and the public discourse of securitization. Australia's isolation from the rest of the

world is part of its national identity (Wazana, 2004, p. 84). It is reinforced in many ways, including in the application of strict quarantine rules that seemingly mirror the approach to immigration. This reduced tolerance for difference is demonstrable in Australian asylum seeker policy, and through the surrounding discourse and cultural myths.

A discourse of fear of the other and a spectre of criminality are used to justify the securitization of Australia's borders, despite statistical evidence and expert advice suggesting that this is not a prominent cause for concern. Australia has a very low level of violent crime and particularly of terrorism (Australian Institute of Criminology, 2018); over the past two decades, only five deaths have been attributed to terrorist actions (note that this figure does not include a recent attack killing two in Melbourne speculated, but not confirmed, to be related to terrorism) (Hasan, 2017). In fact, the UN's Special Rapporteur on counter-terrorism and human rights, Ben Emmerson, stated that overly strict policies may have the opposite effect: "migration policies that are restrictive or that violate human rights may in fact create conditions conducive to terrorism" (Celaya, 2016).

Risk society and Australian invasion anxiety

If policy is not, then, based on actual risk, then what framework can be used to explain the intense anxiety of Australians around the asylum seeker? The concept of the risk society can help explain why such discourse is so effective and impactful. Essentially, the 'risk society' is the modern society that faces risks far beyond those previously encountered; modern occurrences such as nuclear terror and climate change pose existential threats. As Beck (Ritzer, Beck & Atalay, 2010, p. 264) writes, "The speeding up of modernization has produced a gulf between the world of quantifiable risk in which we think and act, and the world of non-quantifiable insecurities that we are creating... that might ultimately endanger all life on earth". Unlike these threats, the prevention of crime is an individualized risk. Ungar (2001, p. 275) writes:

"Fear of crime is a particularly apt discourse within the modernist quest for order since the risks it signifies, unlike other late modern risks, are knowable, decisionable, (actionable), and potentially controllable. In an age of uncertainty, discourses that appear to promise a resolution to ambivalence by producing identifiable victims and blameable villains are likely to figure prominently in the State's ceaseless attempts to impose social order."

In an Australian context, this is a particularly relevant theory to consider in relation to Australian fear and

anxiety. "Australia's geographical position, as a bastion of 'Western civilization' in a sea of Asian countries, has had important ramifications for the country's sense of identity and its fears around how many 'foreigners' it is ready to receive." (Wazana, 2004, p. 84). Despite being a nation founded upon land where sovereignty was never ceded, an ironic fear of invasion can be observed in Australian society and policy. Refugees and asylum seekers are the perfect demonstration of exactly what upsets this anxiety: a 'queue jumper', who is foreign, coming into the country via 'illegal' means. The refugee or asylum seeker is not seen as an obedient body; it defies its role as complicit in war and as victim (Wazana, 2004, p. 86-87). The idea of the illegitimate asylum seeker, who is only looking to have an easier time migrating rather than legitimately seeking asylum is common in the collective imagination. This is particularly true as awareness around the circumstances of forced migration is low, and the complexity of what might make someone choose to flee prosecution is not often discussed (Wazana, 2004, p. 84). This refusal to conform to the global status quo makes it easy to categorise the asylum seeker or refugee body as an inherently criminal one, and as a body to be feared.

Anti-terror discourse and the asylum seeker

Not only criminality, but terrorist status, is often assigned to refugees and asylum seekers. Anti-terrorism discourse often features prominently in these discussions. Pauline Hanson, founder of Australia's far-right One Nation party, maintains the idea that the asylum seeker is the terrorist in the public sphere. She once directly asked the head of Australian Security Intelligence Organisation publicly about the link between the increase she perceived in refugees and terrorism (Australian Associated Press, 2017). The immigration policy page of Hanson's One Nation party includes the statement, "We believe Australia has the right to choose the number and mix of migrants to ensure immigration is in the national interest of existing citizens". The page continues, "...we cannot ignore first, second and third generation migrants who violently reject Australia's democratic values and institutions in the name of radical Islam." A travel ban from 'known countries of radicalism' is then suggested (Pucci & Pauline Hanson's One Nation, 2018). This blatantly connects the idea of migration and terrorism, and also holds implications for asylum seekers specifically given the idea that Australia should be able to 'choose' which immigrants are allowed. The most common justification given for the detention process is that it keeps Australians safe; and here the implication is clearly that

without intense border policy, terrorism will occur. Anti-terror discourse is incredibly effective in creating fear. Although a more extreme example, similar attitudes are mirrored in subtler ways in the policies of the two major political parties; particularly in the emphasis of use of language such as 'border protection' (Liberal Party of Australia & Hirst, 2018; Carroll & Australian Labor Party, 2018). This fear, when combined with the aforementioned invasion anxiety, intensifies anti-immigrant sentiment.

Said Imasi's case and how this demonstrates the theoretical framework

Applying this theory to the case of Said Imasi, a conflation of the migrant with the criminal and even the terrorist can be observed, through the denial of many rights, including rights to fair trial.

In Imasi's case, the issue around identity and visa issuance clarifies this apparent link. It is worth noting that Imasi's statelessness creates a unique challenge in ending his detention; he is unable to be released from detention without a visa (Human Rights Council Working Group on Arbitrary Detention, 2017). Under current law, it is impossible to grant him a visa (without intervention from the Minister for Immigration) without having a nationality; this includes with intervention from court processes (Human Rights Council Working Group on Arbitrary Detention, 2017). One of the more supposedly important reasons given for the continued detention of Imasi and a source of particular difficulty in granting him a visa is the inability to ascertain his true identity. However, since Imasi has been recognized as a stateless person, finding any such identifying documents is impossible. Denying him a visa based on this fact is a violation of his right to not experience arbitrary detention, and can be categorized at least partially as a detention on the basis of statelessness (Human Rights Council Working Group on Arbitrary Detention, 2017).

The Australian Government has stated that his lack of identity makes it impossible to establish what security threat he may pose. While it is important to acknowledge that Imasi does, apparently, have something of a self-described criminal past due to his involvement with gangs, there is still no reason he should legally be denied asylum (particularly given it is because he is fleeing this lifestyle that he has to seek asylum, and that he became involved as a child). Legally, there are no recorded crimes or convictions upon which his entry could be denied on character basis to Australia (Commonwealth Parliament & Parliament House, 2018). Therefore, it cannot be claimed

that Imasi is legitimately being denied asylum as a security risk based on anything other than fear of the Other and assigned 'risk'. Imasi has been painted through the discourse of the criminal asylum seeker to be at least potentially dangerous; too dangerous to grant a visa to, and too dangerous to be granted human rights. Imasi exemplifies how the image of the asylum seeker has been securitized into being the Other.

Again drawing on Imasi's case, his inability to challenge also demonstrates how asylum seekers are criminalised and depersonalised by policy. Under Australian law, non-citizens do not have an equal status to citizens before the law and thus have no ability to challenge administrative detention. Despite having experienced an untenably long detention, Imasi has no way to challenge his position, despite the UN recommending his release and compensation (Human Rights Council Working Group on Arbitrary Detention, 2017). Significantly, the only other instance in which an individual does not have rights to challenge detention for more than 24 hours is when being held on suspicion of being involved in terrorist activity (note that access to a lawyer here is allowed) (Attorney General's Department, 2018, p. 9). Furthermore, actions such as extradition obviously cannot be undertaken when the person concerned is stateless.

The criminalisation of these actions is taken further considering that Imasi has even fewer rights than a 'typical' criminal in Australia. According to the International Covenant on Civil and Political Rights (1976), Article 9, Section 3 'anyone arrested or detained on a criminal charge shall be brought promptly before a judge or another officer authorized by law to exercise judicial power and shall be entitled to a trial within a reasonable time or release… release may be subject to guarantees to appear for trial' (OHCHR, 2018). A 'reasonable time' can be considered to be less than eight years and eleven months with no forthcoming trial; particularly considering that the legal precedent of the A vs Australia case ruled that a detention period of four years was prolonged (Human Rights Council Working Group on Arbitrary Detention, 2017). However, it is important to note the wording here; specifically, this refers to anyone "detained on a criminal charge". Imasi is technically detained on administrative, not criminal, grounds. Imasi does not even have the same rights as many of those who are suspected to have or have committed criminal actions (Human Rights Council Working Group on Arbitrary Detention 2017). In fact, his human rights are here being actively violated. Mr. Imasi has been denied human status, through how he has been unjustly deemed a threat and a risk, and thus Othered.

Globalisation: what can be learned from the case of Said Imasi with respect to international law?

Imasi's case highlights several factors around international law and the criminalisation of immigration that should be further investigated. Firstly, it demonstrates how stateless persons have little to no recourse when caught in between states. Due to being stateless, Imasi is suspended in perpetual waiting, as his case lies solely in the hands of the Australian government with no other state power pressuring case resolution or able to repatriate him. States will first and foremost remain loyal to their own internal interests and the interests of the majority of the population (or at least those with social power).

While political motivation remains a major contributing factor of security policy, this will not be likely to change, which Imasi's case demonstrates. It is worth noting that Australia is one of the ratifying nations of the Convention Against Statelessness. This document states that: "Underlying the 1961 Convention is the notion that while States maintain the right to elaborate the content of their nationality laws, they must do so in compliance with international norms relating to nationality, including the principle that statelessness should be avoided." (United Nations, 2014). In accordance with a good-faith interpretation of this document, a 2006 consensus (during which Australia was an executive on the board), includes the request for states "not to detain stateless persons on the sole basis of their being stateless and to treat them in accordance with international human rights law and also calls on States Parties to the 1954 Convention relating to the Status of Stateless Persons to fully implement its provisions". (UNHCR Executive Committee of the High Commissioner's Programme, 2006). Imasi's case demonstrates that this commitment is not the Australian government's priority.

The UN has stated that the detention of Mr. Imasi is unlawful. However, despite violating international human rights law, the Australian Government has not stopped this action. His imprisonment has been ruled 'arbitrary detention' due to several factors (Human Rights Council Working Group on Arbitrary Detention, 2017). Firstly, he has been placed in detention as a result of exercising his rights to flee persecution and seek asylum. Secondly, Imasi has been denied the right to fair due process. Most basically, Imasi's human rights according to the Universal Declaration of Human Rights are being violated. Specifically, Articles 9 and 10 state that "No one shall be subjected to arbitrary arrest, detention or exile… Everyone is entitled in full equality to a fair and public hearing by an

independent and impartial tribunal, in the determination of his rights and obligations and of any criminal charge against him." (United Nations, n.d.) The right to not be arbitrarily detained is reiterated in the International Covenant on Civil and Political Rights (1976) in Article 9 (OHCHR, 2018). Additionally, Imasi has no access to case review or remedy. This is not contrary to Australian constitutional law (Human Rights Council Working Group on Arbitrary Detention, 2017).

International law does not have adequate (or, in fact, any) process to prosecute states for such violations; whether, indeed, it should is controversial. These types of crimes: crimes by the state, crimes against the individual, and non-war crimes are not eligible to go before any international justice process despite having violated international recommendation.

Clearly, the maintenance of security is the priority of the state over following international law. When this results in such egregious violations of individual human rights, though, in what way should the global community interfere? Despite the recommendations from the UN that Mr Imasi be released and compensated, the Australian Government has refused to do so; and in fact has no real obligation to do so other than that of acting in good faith.

In a state-based system, where state-based security grows increasingly prioritized , the fate of the stateless person is in jeopardy. Statelessness becomes essentially a crime when the world functions purely on states, as it means individuals cannot righteously or legally live or move anywhere without violating laws. This is particularly true under such intensely securitized conditions. States will not hold themselves accountable, rather, it is imperative to form globalized systems in order to ensure such violations of international law do not occur (Powell, 2018). International law will have to consider how to handle these cases in the future in order to prevent further violations of human rights in an increasingly securitized world, as demonstrated by the plight of Imasi.

Conclusion

Australian immigration policies work to undermine international law, and Said Imasi's case of prolonged detention is demonstrative of how securitization of immigration works to criminalise human movement and individuals. Imasi's case was discussed through several theoretical lenses. Firstly, the securitization of immigration has created a world in which state identity and politics has become intertwined with anti-immigration ideology. This can be demonstrated through an examination of Australian fear, and the conflation of crime and immigration. Applying

the risk society theory helps explain this effect, particularly in an Australian context. Finally, a lack of global resolutions to such situations is demonstrable, and similar cases will continue to occur without some kind of global legal process being formed. The case of Said Imasi should not be a meaningless crime; his ongoing dehumanization and violation of rights should serve to guide future policy decisions and as a source of thought for international criminal law experts.

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Social Sciences

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The Impact of Gentrification on Amsterdam's Housing Market and Urban Residents

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Abstract

As the population of Amsterdam grows, successful urban policies need to take into account both the dynamics of the housing market and the relationship between residents and the city itself. This paper assesses the effects of Dutch neo-liberal policies on urban households. Through a comparative literature review, both the positive and negative effects of gentrification on low, middle, and high-income households are discussed. Research suggests that Dutch pro-gentrification, neo-liberal policies in Amsterdam have deepened the divide, rather than integrated, different socio-economic groups. Thus, gentrification is benefiting only high-income households- a small and privileged sector of the urban population.

Historically, the majority of the world's population lived in rural areas. Over the past century, however, urban populations have increased dramatically: from 14% to 46% (United Nations, 2015). The relationship between an urban environment and its residents is both complex and, as literature on urbanization has indicated, context-dependent (Hochstenbach, Musterd & Teernstra, 2014). Moreover, the relationship has undergone substantial changes since the 1990s due to the rise in popularity of liberalisation policies across the globe. These policies favour market-based systems versus publicly funded programs, which allow governments to reduce their costs while providing solutions to societal problems (Smith, 2002).

Gentrification, defined as "the transformation of space for more affluent users" (Hackworth, 2002), has been one of the most significant outcomes of urban neoliberal policies. Amsterdam offers a particularly rich case study for the topic of gentrification. It is a global city with a very diverse population that experienced migration flows earlier than other European cities (Musterd & Fullaondo, 2008). For example, the city has seen influxes of immigrants from former colonies such as Surinam, guest workers, and political and economic refugees (Ibid.). The city is also characterised by a highly-regulated housing market and a strong institutional context (Hochstenbach et. al, 2014).

Despite being an exemplar case study, there are key research gaps that need to be addressed. For instance, much of the literature on gentrification has focused exclusively on middle- or high-income residents; as a result, little has been written about the low-income residents or ethnic minorities who also reside in the city. This paper aims to discuss both the positive and negative effects of gentrification on higher-, middle- and low-income residents through a comparative literature review. This paper will take into account two main perspectives: the relationship of the residents with the housing market and the general relationship of the residents with the city. The objective is to obtain a more comprehensive picture of the effects of gentrification, which are currently re-shaping Amsterdam.

A substantial amount of literature has contributed the rapid and ongoing processes of gentrification in the city to Dutch neoliberal policies. Less known, however, is how these neoliberal policies polarise the inequalities between the urban residents of Amsterdam. Neoliberalism in an urban context translates into incentives for property ownership, deregulation, and reduced social welfare regimes (Kadi & Ronald, 2014), all of which foster gentrification. Through a careful analysis of the changes in the relationships between residents, the housing market, and the city itself, this paper will argue that while gentrification results in progress for some privileged residents, it also diminishes the opportunities and rights of a large portion of the low-income urban population.

Researchers have mixed conclusions about the impact of gentrification in Amsterdam. On one hand, some, such as Pinkster and Boterman (2017) argue that increased urban tourism places pressure on middle-income residents living in gentrifying neighbourhoods, such as the Canal District. In extreme cases, residents relocate. On the other hand, Hochstenbach, Musterd, and Teernstra (2008) claim a lack of direct evidence of displacement. Instead, they argue lower- and middle-income households are able to access gentrified neighbourhoods thanks to social housing dwellings, which comprise roughly 49.4% of Amsterdam's total housing stock (Hochstenbach et. al, 2014).

Given the disagreements among scholars, it is both unclear how gentrification affects Amsterdam, but also whether gentrification is a positive or a negative phenomenon. Hochstenbach, Musterd, and Teernstra (2014) concluded that marginal gentrification, defined as "an independent and structural process … which the outcome need not necessarily be a wealthy neighbourhood" (Hochstenbach et. al., 2014, p. 756), was beneficial to middle-income residents because it allowed for social

mobility and increased wages. Using the same line of reasoning, the Dutch government promotes gentrification as a way to diminish segregation and the concentration of ethnic minorities in certain neighbourhoods, arguing that otherwise the integration and participation of those groups in society would be threatened (Ministerie van Justitie, 2005). Bolt, van Kempen, and van Ham (2008) challenged this belief. They claimed that gentrification is not a good solution to battle ethnic segregation since ethnic concentrations will continue to occur in other, more affordable neighbourhoods. Furthermore, taking an example from the rapidly gentrifying district of Berlin-Neukölln, research by Tize and Reis (2019) has shown how, despite greater ethnic mixing, gentrification has not increased social contact, and in fact has increased social control, caused greater rifts between new and old residents, and challenged already ambiguous forms of belonging for young migrants at risk of displacement.

Gentrification has had a profound, negative effect on the housing market based on the household's socio-economic status. Before the 1990s, this was not the case in Amsterdam, as the strong Dutch welfare state gave all socio-economic groups realistic chances of accessing dwellings in the city (van Gent, 2013). However, after the economic crisis of 2008, the Dutch government shifted to a neoliberal welfare model in order to cut many of its costs (Ibid.). Ever since, access to the housing market has been determined by the income level of each household.

High-income households have gained the most access to dwellings in Amsterdam. To promote gentrification, the Dutch government took two main actions in the early 2000s: the demolition of social housing, which are public-owned dwellings rented at government regulated prices, and promotion of the construction of owner-occupied housing, which are private-owned dwellings that could be either sold or rented at market prices (Uitermark, 2013). These actions raised market prices and generated inflation, thus significantly reducing the city's supply of inexpensive housing (Kadi and Ronald, 2014). In this context, only financially-solvent households are capable of acquiring properties in all neighbourhoods. This is particularly pronounced in the city's centre, the Canal District, and its southern areas (Uitermark, 2013).

Nevertheless, accessibility or lack thereof also translated into self-segregation. As Bolt et. al. (2007) showed, the high-income residents, mainly comprised of native Dutch households, exhibits a strong preference for living in neighbourhoods with low concentrations of non-Western immigrants, thus contributing to self-segregation. This is of particular interest because, as mentioned earlier, the Dutch government's pro-gentrification policy aims to ensure the integration of ethnic minorities to Dutch society by reducing their concentration in specific neighbourhoods. Nevertheless, the same process of gentrification enhances the self-segregation of the native Dutch population. Thus, self-segregation further complicates a possible solution, as current policies do not take this into account.

In contrast to high-income households, middle-income households have contributed more to the social diversity in Amsterdam. It is worth noting that this group has experienced marginal gentrification rather than the general gentrification process previously outlined (Hochstenbach et al., 2014). The former is associated with "highly educated but only tenuously employed or modestly earning professionals… who sought out niches in inner-city neighbourhoods - as renters in the private or non-profit sectors, or … as co-owners of modestly priced apartment units" (Rose, 1996, p. 134). As these households move into gentrified neighbourhoods, which are close to urban amenities and job opportunities, they reduce the segregation of minorities, contributing to the social diversity. In return, they gain upward socioeconomic mobility (Hochstenbach et al., 2014).

Marginal gentrification can also result in displacement and exclusionary practises by provoking steep rental increases in the private rental sector (Van Criekingen, 2010). When middle-income households struggle to afford private property, they sometimes turn to social housing stock in order to save money, thus excluding lower-income households from accessing these dwellings. Although state regulations prohibit the direct displacement of low-income households, many nonetheless feel displacement pressures due to the changing neighbourhood environment (Hochstenbach et al., 2014). In other words, it is not high-income but rather, middle-income households that put the most displacement pressure on low-income households in the social housing sector.

Another important displacement factor for low-income households is eviction due to renewal of the social housing stock. By law, evicted families must be offered alternative housing. Surprisingly, Tieskens and Musterd (2013) showed that in most cases, low-income families obtained better dwellings after eviction when measured in terms of floor space. Most also managed to improve the quality of the building they lived in: namely, moving out of post-war housing (Ibid.). Evicted families could also indicate their preferred neighbourhood for relocation, although in 71% of

cases, they chose to remain in the same neighbourhood (Ibid.).

However, the renovation of buildings is only occasionally a trigger of displacement. The ongoing cause is, as mentioned previously, when low-income families feel displacement pressures due to a changing neighbourhood that is the result of gentrification. Therefore, lower-middle and low-income households are pushed to more peripheral areas of the city, where affordable housing is still available (Uitermark and Bosker, 2014). This process also results in the segregation of lower-income groups (Ibid.). As such, lower-income groups have suffered the most reduction in their accessibility to dwellings in Amsterdam.

Although some consequences of gentrification can be easily identified, such as relocation patterns or rental increases, other aspects remain harder to study. Equally important is the impact of gentrification on the relationship between the residents and the city itself. Researchers have explored this relationship through qualitative studies that divide the population into socio-economic groups. As will be discussed, most of the relationships between the residents and the city have deteriorated as a result of gentrification.

High-income households are placed in the middle of Amsterdam's redefinition of the city, in which household income determines one's neighborhood and right to live in the city as a whole. Policymakers believe that one should pay more to live in a nice neighbourhood close to the city centre (van Gent, 2013). This belief is reflected in Amsterdam's municipality plans to increase expensive housing stock in the city from 10% to more than 20% and further reduce cheap stock from more than 45% to less than 30% by 2020 (Municipality of Amsterdam, 2008).

For middle-income households, the main change is the decreased 'liveability' of their neighbourhoods. As Pinkster and Boterman (2017) report, the gentrification of once-residential, now-touristic neighbourhoods negatively affects middle-income households in two ways. The first consequence is a loss of authenticity, as neighbourhoods no longer offer amenities rooted in Dutch traditions, but rather extrapolated from them, such as the beer bike, a popular touristic activity. A second consequence is the disappearance of ordinary shops, which interferes with everyday interactions. For instance, bakeries and supermarkets are being replaced by spaces that cater to tourists, such as hotels and souvenir shops. To cope with this decreased liveability, residents seclude themselves from the social sphere, or in extreme case, relocate (Pinkster and Boterman, 2017).

Gentrification has caused the greatest suffering among low-income households. On the one hand, their sense of belonging has diminished, as they feel stronger displacement pressures (Kadi and Ronald, 2014). On the other hand, as more areas become unaffordable to low-income households, public spaces that comprise not only neighbourhoods but also downtown areas lose their public function (Pinkster and Boterman, 2017). In order to keep those spaces alive, it is important to secure their use for all socio-economic groups.

As the urban population grows each year, the success of urban policies will depend upon both an understanding of the dynamics of the housing market and the relationship between urban residents and the city itself. Nevertheless, Dutch pro-gentrification, neo-liberal policies in Amsterdam have segregated, rather than integrated, different socio-economic groups. High-income households have gained access to the central sectors of the city, whilst middle- and low-income households struggle to afford dwellings, pushing them to peripheral areas and, in turn, reducing the public function of urban spaces. Although gentrification brings some social mix through the upward mobility of middle-income households, this is only temporary, as high-income households eventually self-segregate (van Gent, 2013). This tendency to self-segregate reflects a mismatch between policymaking and the phenomena shaping the city.

It is clear that gentrification benefits only a small sector of the urban population: namely, high-income households. Meanwhile, Dutch policies do not address the disruptions to the daily interactions of middle-income household, the decreased liveability of the high-income households due increased tourism, nor low-income households' diminished sense of belonging within the changing urban landscape. Further research is needed to determine additional negative effects of gentrification in Amsterdam, particularly those concerning ethnic minorities and low-income households. Only then can policies properly address and improve the living conditions of all urban residents.

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Humanities

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Monstering and being monstered: *Frankenstein* and the fear of 'unnatural' bodies

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Aedan Lamers

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Advances in medicine and technology increasingly allow us to modify and transform our bodies. These transformations often involve the addition of elements to the body: non-'natural' inorganic additions such as pacemakers, prosthetic limbs and contact lenses, as well as organic elements that are not 'naturally' produced by a specific body in a specific moment in time, such as contraceptive hormones and mood-altering drugs. Organ transplants even allow the integration of parts produced by different human bodies into that of the recipient, while cosmetic surgery changes the configuration of bodies by removing or rearranging parts. Some of these modifications and additions are deemed more 'unnatural' than others and are met with more resistance and stigma by society (Evans 2). Physically disabled bodies and transgender bodies are especially stigmatized, because they defy gendered expectations of what bodies are supposed to look and work like (Thomas 64). In the eighteenth century, when scientific advances laid the groundwork for a rapid proliferation of possibilities of bodily modification and transformation, this stigmatization of bodies through labeling them unnatural was manifest in Mary Shelley's *Frankenstein.*

The complexity of the relationships between gendered expectation of bodies, the concept of 'naturalness', and the way disabled and transgender bodies are treated in society can be explored through *Frankenstein*. For the purposes of this paper, 'science' refers to the study of the natural world and the resulting technologies that can be used to manipulate it, whereas 'nature' refers to the state of the world – including bodies – without any scientific influence. The creature from *Frankenstein* was created out of body parts of deceased humans and animals and brought to life using electricity. His creation was as 'scientific' – as opposed to 'natural' – as could be imagined, while his creator still intended to manufacture "a human being" (Shelley 41). His abnormal body causes him to be rejected and persecuted by every human being he meets, including his creator. Similarly, people with bodies that are deemed 'unnatural' are often denied community, public existence – with a common exception being instances where they are allowed visibility to function as entertainment – and even their humanity. This paper argues that *Frankenstein* embodies the way in which bodies modified by science, particularly those deemed especially 'unnatural' for not conforming to gendered expectations of the body, are viewed and treated in Western society and suggests that there is empowerment to be found in doing as the creature does and 'monstering' ourselves.

Around the time Mary Shelley wrote *Frankenstein*, a number of scientific discoveries relating to the human body were made which may have influenced her in writing about the scientific work of her protagonist. For example, the experiments of Luigi Galvani, in which he induced muscle contractions by admitting an electric current to a dead body, blurred the boundary between life and death, since movement of the body after death suggested that dead bodies could be brought back to life (Mellor 18). These experiments influenced Shelley in her portrayal of the creation of the creature, which is made from body parts gathered from "the dissecting room and the slaughter-house" (Shelley 43) and is brought to life using electricity (Mellor 18). Additionally, as dissection became more popular, knowledge about the anatomy of the human body increased which made it easier to imagine ways to change the body or, as Victor Frankenstein does, to create new 'bodies of science' (Stelmackowich 76).

The scientist became an important figure in this era, and is often portrayed as someone who attempts to control nature and bend it to his will (Mellor 18-19). Frankenstein is an example of such a scientist, wanting to "penetrate into the recesses of nature, and shew how she works in her hiding places" (Shelley 35), and attempting to imitate nature by creating life itself. His attempt, while successful in its goal of creating life, ultimately ends in disaster which shows that there can be negative consequences attached to challenging nature. In critiquing the arrogance of the scientist, Shelley aligns herself with Romantic writers such as Wordsworth and Coleridge, who suggest that people should experience nature, without attempting to control it (McKechnie and Alder 1). Seeing as humans are part of nature, the idea that science dominates nature in combination with the increased knowledge about the human body made it seem possible for scientists to modify human bodies, making these bodies into something more 'scientific' than 'natural' and creating 'unnatural', 'posthuman' bodies (Sheehan 246). This idea fostered, and continues to foster, an anxiety expressed in science fiction (Sheehan 258). Scientific advancements since the nineteenth century have indeed managed to open up a wide range of new possibilities of altering the body and integrating technology into it. Many of these new methods are designed to treat illness, but new ways of regulating or transforming the body for cosmetic reasons, contraception, gender-affirming treatments and other purposes have emerged as well (De Preester 119; Clayton 53). Through exploring *Frankenstein*, it might be possible to gain a historically contextualized understanding of practices that alter the body.

When attempting to understand the anxiety around the creation of 'unnatural' bodies by science, it is important to note there is not one, fixed 'natural' body, as the idea of what a 'natural' body constitutes is subject to change over time. Even nature itself is not a stable concept, but rather consists of "multiple, socially constructed and contested 'natures,' each operating from within different, historically specific constellations of social, discursive, and material practices" (Hess 5). People have been modifying their bodies – to combat disease, increase beauty or signify the identity of the body – for all of human history (Evans 2). Whether a body is deemed 'natural' or not is dependent on the culture in which it is situated and the historic moment within which it is viewed (Evans 1). One could then argue that nobody can ever be truly 'natural' since, beyond biology, there are always social forces at play in its definition. In Mary Evans' words: "all bodies, even those apparently created by science, are both natural and social", and "present renegotiations of the body do not start from a 'natural' state of the body but from a body, and a set of expectations about the body, which are already deeply socialized" (2).

Within contemporary Western society, some scientifically modified bodies are more accepted than others, because they are argued to be more 'natural'. It is commonly deemed natural to combat physical diseases, but less natural to use medicine to fight mental illnesses and even more unnatural to modify the body to relieve gender dysphoria or obtain a body that will be socially gendered in a way that better aligns with a person's individual identity: the desire not to experience illness is somehow seen as more natural than the desire to not experience gender dysphoria. Furthermore, there are also bodies that are deemed unnatural in an unmodified state: these are often visibly disabled bodies, which are seen as being in need of 'fixing', in order to more closely resemble a 'typical' human body, as in the case of prostheses being used to appear more 'normal' rather than to increase the disabled person's ability or comfort (Mossman). This demonstrates that society's idea of what is natural is intertwined with society's idea of the 'typical' or 'conventional' body.

Although there is no measure of what is natural, the labelling of some bodies as more natural than other can have a profound impact on the way in which these bodies are treated. In *Frankenstein*, the creature created by Victor Frankenstein during months of passionate labour is rejected by its creator immediately after being brought to life:

How can I describe my emotions at this catastrophe, or how delineate the wretch whom with such infinite pains and care I had endeavoured to form? His limbs were in proportion, and I had selected his features as beautiful. Beautiful!–Great God! His yellow skin scarcely covered the work of muscles and arteries beneath; his hair was of a lustrous black, and flowing; his teeth of a pearly whiteness; but these luxuriances only formed a more horrid contrast with his watery eyes, that seemed almost of the same colour as the dun white sockets in which they were set, his shrivelled complexion, and straight black lips (Shelley 45).

The parts that Frankenstein had selected for their beauty suddenly lose this beauty when put together and made to function as a living body. The physical working of the body beneath the skin is not usually seen unless it is wounded or dead, thus the visibility of the "work of muscles and arteries beneath" gives the body an unnatural appearance, which frightens Frankenstein. Even the aesthetically beautiful can be perceived as monstrous, when it does not accord with ideas of what is natural. At this point, when the creature has not shown any behaviour yet, Frankenstein decides the creature is a "catastrophe" and a "wretch" based purely on his abnormal body. He goes on to run from the creature and deny him care, even though, as his creator, the responsibility for the creature's upbringing is his. The family whose protection the creature seeks at a later point in the novel reacts similarly: the blind father, unable to see the creature, first engages in friendly conversation, but once the other inhabitants of the cottage see the creature's physical form, they each faint, run away or attack the creature. The physical form of the creature quite literally causes him to be dehumanized: initially, Frankenstein set out to "give life to an animal as complex and wonderful as man" and "[create] a human being" (Shelley 41), but after seeing his creature when it is alive, he calls it a "demoniacal corpse" (Shelley 46) and mentions that "the deformity of its aspect [is] more hideous than belongs to humanity" (Shelley 65). The creature is no longer considered human – even though it is evidently capable of experiencing emotions, mastering language and performing all physical tasks that humans can, and longs to be accepted into human society – purely because of its atypical appearance. This affects his interpersonal relationships drastically: he is not treated like a human but as a monster. However, Shelley dares the reader to imagine a different way of approaching the 'unnatural' where it is allowed to be part of human society, suggesting that the creature might have been able to live peacefully and happily, had Frankenstein accepted and supported him. Thus, in *Frankenstein*, the body does not necessarily signify

a certain character or personality. While a connection between appearance and monstrosity is present in other science fiction works that deal with the body, such as Robert Louis Stevenson's *The Strange Case of Dr. Jekyll and Mr. Hyde* (Tyler 121)*,* in *Frankenstein*, it is society's reaction to the body, not the body itself or the mind it is connected to, that makes it monstrous. The people who reject the creature are effectively 'monstering' him through their revulsion to him. This eventually leads to the creature giving up on trying to be accepted into human society, instead turning against humans in murderous, pain-fueled bouts of rage, conforming to the label of 'monster' through his actions and as such further 'monstering' itself.

These ideas of 'monstering' – i.e., performing monstrosity – and 'being monstered' – i.e. being made into a monster – are relevant to the way in which many bodies that are seen as 'abnormal' or 'unnatural' move through society. In discourse around transgender bodies and, in particular, those bodies that are medically transitioning or have transitioned, words like "freak", "mutant" and "deformity" often pop up, linking the transgender body to monstrosity (Stryker 239; Holman Jones and Harris 518; Nordmarken 41). At the same time, phrases such as "war with nature" and "alienated from true being" (Stryker 239) connect this monstrosity to the 'unnaturalness' of the body: it is monstrous because it is unnatural. This reasoning has been used to police the body, ban it from certain communities, and deny it public existence (Stryker 239-240). In fact, when it is argued that the body is a deformed version of a 'natural' body, to which form it must return, the transitioned body is denied the very right to exist. One particularly strong fear about the 'abnormal' body is tied to its ability to reproduce. Just as Frankenstein denies the creature a companion out of fear that it might reproduce "and a race of devils would be propagated upon the earth" (Shelley 160), forced sterilization of people with many different kinds of disabilities often occurs (World Health Organization 5). Likewise, transgender people are often forced to give up their reproductive abilities in order to gain access to, for example, legal gender marker changes (World Health Organization 7; Lee 148). The advances in medicine and technology allow trans people to transition, but only if they fulfill certain requirements, often including a desire to obtain a body that appears as much like a cisgender body as possible. Transitioning in this way makes the body increasingly monstrous, because it becomes increasingly modified and thus 'unnatural', but it also makes the it more passable as a typical 'natural' cisgender body, and therefore more acceptable. Similarly, Victor Frankenstein's disgust being immediately directed at the creature's appearance suggests that he might have been more readily accepted by his creator and society as a whole if he had *appeared* more 'natural', even though it is inherently unnatural because of the way it was conceived, and Frankenstein is aware of this. Thus, the danger is not so much in having an unnatural body, but in having one that is easily perceived as such.

In response to policing of the body, the inhabitants of these bodies can use Frankenstein's creature as inspiration for taking ownership of their own narrative by 'monstering' themselves. Performing monstrosity by refusing to conform to the ideal of the typical, easily categorizable, 'natural' body and accepting oneself as a "created being[]" (Stryker 240) can be a form of resistance (Nordmarken 39). As Nordmarken points out, being deliberately illegible can help to 'undo' oppressive categories (40), and give marginalized bodies a sense of power, as is reflected in Mossman's description of his response to first reading *Frankenstein*:

The creature was the ultimate victim of stereotyped oppression, of a disabling construction of "ugliness"; the creature's response was to torment its author, to triumph in the end by driving its creator and the one who first names it "ugly" to a cruel death. In this way, I vaguely recognized that the creature resisted what it had become and used its disabled body . . . to wreck the inscribing process of outside definition. Being constructed in postmodern discourse, being the person I was and am, I read the creature as "powerful" in its resistance: the creature gained power through its disempowered body; it took the imposition of "abnormality" and used it as an articulation of strength and purpose. When I read the narrative, I read these terms into my own body.

Though the creature ended its life alone and unhappy, and 'monstering' himself did not help him while hurting others, 'monstering' does not have to be destructive for humans with 'unnatural' bodies. After all, these people are not alone: they are blessed with the companions that the creature longed for, but never got to meet. In the creature's words: if "we shall be monsters, cut off from all the world . . . on that account we shall be more attached to one another" (Shelley 137).

The treatment of the creature in *Frankenstein* reflects a fear of scientifically modified or created 'unnatural' bodies, related to scientific advancements in medicine and technology. As science increasingly permits us to 'tamper with nature' and modify our bodies for various reasons, it has become clear that some 'unnatural' bodies are deemed

more monstrous than others. The socially and historically determined idea of the 'natural', ideal body is used to police certain bodies, especially disabled and transgender bodies, and deny them their humanity which parallels Victor Frankenstein quite literally dehumanizing his creature as soon as it came to life and its abnormality became obvious. We can learn from the creature and find empowerment in responding to society's view of us as monsters, by 'monstering' ourselves. In Susan Stryker's words: "though we forego the privileges of naturalness, we are not deterred, for we ally ourselves instead with the chaos and blackness from which Nature itself spills forth" (251).

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Humanities

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A Foucauldian analysis of *The Breakfast Club*'s Allison Reynolds, *Clueless*'s Tai Fraiser and *The Princess Diaries*' Mia Thermopolis:

How the disciplinary practices during the makeover transformation in teen films (1985-2005) signify the teenage female character's loss of control over her body

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Abstract

This article argues that the disciplinary training during the teenage female makeover sequence in the teen film genre are a corporealization of postmodernist theorist Michel Foucault's vision of a prison-like institution. Through analyzing the teenage female makeover scenes of Allison Reynolds in *The Breakfast Club*, Tai Fraiser in *Clueless* and Mia Thermopolis in *The Princess Diaries* in the teen film genre, I argue that the makeover doer's dramatic manipulation of the teenage female character's appearance and manners of speaking constitutes the teenage female subject's subsequent loss of control over her body. Given the elaborate and dramatic physical transformation during the makeover, the teenage female character loses her agency over her own body as she is unable to easily revert back to her old self, thereby eradicating parts of her identity with no traces of her former self left behind. The application of makeup, the overhaul of clothing wardrobes and the speech training lessons are disciplinary actions the doer commits to discipline the teenage female character's body to practices of obedience, leading to the creation of what Foucault termed, *docile bodies*, the individual that merely obeys and has no control over her own body.

Key words: makeover, control, discipline, Foucault, docile bodies

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With a dab of makeup, a new hairstyle and wardrobe, the teenage girl loses control over her appearance during the scene of the makeover process, a common trope in the teen film genre. The makeover doer's dramatic alteration of the teenage female character's appearance ultimately makes her a prisoner of her own body.

Most scholars have analyzed how the makeover transformation in the teen film genre impacts the teenage female character's gain of control post-makeover. Elizabeth Ford and Deborah Mitchell reference the subsequent surge in the popularity of the character, suggesting that the female character commands control over social scenes she initially found trouble adapting to (90). Similarly, Maryn Wilkinson equates the makeover montage as a rite of passage that guides the character towards a more "controlled version of the self" (388). Furthermore, Timothy Shary points out the adolescent female character's motivation for an elaborate makeover is to gain control over her romantic life, to ultimately win over the man of her dreams (46-47). Despite this, there has not been scholarly research that focuses on her loss of control over her body during the makeover process. This loss of control is the price she has to pay for the subsequent gain of control over the social scene post-makeover.

Given the makeover doer's disciplinary role on the teenage female object, such makeover scenes are a corporealization of postmodern thinker Michel Foucault's concept of the prison. Under the watchful eyes of the doer that executes the makeover, the teenage subject learns to discipline the way she presents herself by surrendering her control over her body.

Since the 1980s, there has been a shift from simplistic before-and-after images to more elaborate camera work done to present makeover transformations on screen (Attwood and Deller 264). Given this reason, my research will focus on the female makeover montages in the teen film genre produced between 1985 to 2005 (Attwood and Deller 264). Specifically, I will closely examine the makeover processes of Allison Reynolds (Ally Sheedy) in John Hughes' *The Breakfast Club* (1985), Tai Fraiser (Brittany Murphy) in Amy Heckerling's *Clueless* (1995) and Mia Thermopolis (Anne Hathaway) in Garry Marshall's *The Princess Diaries* (2001).

Behind closed doors

Like prisoners, the teenage female subject is temporarily isolated from the outer world, committing herself to the doer's orders and thereby losing control over her body. In *The Breakfast Club*, Claire (Molly Ringwald) conducts a makeover on Allison in the reference section of the school library, a segregated corner from the main study area. Similarly, Cher (Alicia Silverstone) and Dionne (Stacey Dash) invites Tai for her makeover transformation in Cher's home in *Clueless*. Under the order of her royal grandmother Clarisse, Paolo (Larry Miller) and his two assistants signed an agreement to keep Mia's makeover process confidential in *The Princess Diaries*. Upon entry into the private setting of the makeover, the teenage female character becomes "a machine to carry out experiments, to alter behaviour, to train or correct individuals" (Foucault 203). Given the private setting and the elaborate makeover performed directly on her body, she is unable to escape during the makeover process, becoming utterly vulnerable as the doer of the makeover configures her body.

In fact, some directors added background music to signify to the audience the moment of imprisonment of the

teenage female body. Jill Sobule's lyrics of *Supermodel* "everyone is gonna dress like me when I'm a supermodel… and everyone will wanna look just like me" played during Tai's makeover scene (00:28:47-00:29:07). Sobule's music confirms Cher's ambitions to transform Tai into a supermodel. Tai's body becomes imprisoned as she is forced to adhere to Cher's definition of beauty. *The Princess Diaries* also had upbeat instrumental music, seemingly an ironically cheerful backdrop that contrasts the teenage female subject's loss of control (00:29:35-00:31:15). The upbeat musical score seems to mockingly frame the scene as a celebratory moment of being trained, rather than signifying the teenage female character's imprisonment of the self, the loss of control over her own body.

Despite the lack of accompanying background music during Allison's makeover, under the authoritative watchful eye of the doer of the makeover, she, like Tai and Mia, loses control as master of her own body. Through exploring the change in facial appearance, clothing style and manner of speaking during the makeover process, the following sections demonstrate how these three characters are stripped of their control with regards to how they express themselves bodily during the makeover process.

The creation of docile bodies

During the makeover transformation, the teenage female character loses control over her entire body, becoming a docile body in the process. As Foucault stated, the docile body is "a body manipulated by authority…[and] useful training" (155). Like the management of imprisoned individuals, the doer of the makeover exercises her authority on the seated teenage female character. During the vigorous manipulation process of the female body, the teenage female character is trained to be obedient to the doer's demands. Upon losing control over her body, the teenage female character undergoing the makeover process transforms into a docile body.

Manipulation of hairstyle and addition of makeup.

With the doer's addition of make up and the extensive use of hair products, the teenage female character who undergoes the makeover process loses control over her facial appearance. In *Clueless*, Cher and Dionne wash off Tai's red hair dye, then Dionne carefully applies a rosy foundation, bold eyeliner and a pink-hued lip gloss on Tai's face (00:26:23-00:26:47). Likewise, Paolo also manipulates Mia's body to follow his orders in this scene:

PAOLO.   In Paolo's hands, you will be totally beautiful. Do you wear contact lenses?

MIA.   Well, I have them but I don't really like to wear them that much.
PAOLO.   (proceeds to break Mia's glasses) Now you do.
MIA.   You broke my glasses.
PAOLO.   You broke my brush.
(*The Princess Diaries*, 00:21:12-00:21:43)

In the aforementioned scene, Paolo exerts his authority over Mia during the makeover transformation process, justifying his intentional breaking of Mia's glasses with her unintentional breaking of his hairbrush. Paolo's bold motives frightened Mia so much that she is left with a prolonged shocked expression, suggesting the discomfort, horror and disbelief with the amount of control the doer Paolo has over her face. Furthermore, not only does Paolo leave Mia with limited eyesight and no choice but to wear contact lenses to regain sight, he further adjusts her facial appearance by tweezing her initially bushy eyebrows, performing a lengthy facial and applying elaborate makeup (00:30:31-00:30:49) In these scenes, Mia and Tai are disciplined by the doer of their makeover to sit still to allow them to easily apply products onto both their face and hair. Their facial muscles are instructed to become docile bodies, "caught up in a system of constraints and privations, obligations and prohibitions" (Foucault 11). The teenage female body succumbs to the "system" of beauty standards that the doer of the makeover adheres to and executes on her client. Although these teenage female characters do not have to go through the gruesome process of having a facelift like participants in reality makeover shows, some procedures in the teenage female makeover scenes have semi-permanent impact; hairstyles in particular, such as the straightening of Mia's natural curly hair (Heyes 23). These enduring changes threatens the autonomy of the teenage female character to present herself. Mia's loss of control over her body is signified in the scene where she actively goes against her school's dress code by wearing a hat to hide her newly straightened hair (00:33:39-00:33:49).

Compared to the makeover scenes of Mia and Tai, Allison's makeover in *The Breakfast Club* is seemingly less controlling as she seems to be more willing to have Claire alter her appearance. As Claire brushes Allison's eyebrows, Allison asks her "Why are you being so nice to me?", indicating that she appreciates Claire's efforts in changing her look (01:33:33-01:33:36). Yet Allison's lack of input during the makeover suggests that she, like a prisoner, has lost her freedom; in the case of the makeover, her freedom to express herself through personal style. Despite Allison's declaration of her love for smoky eyeshadow, claiming "I like that black shit", the doer of the makeover, Claire,

disregards her continuous whimpers and wipes out her eyeshadow, applying
light-brown hued eyeliner instead (01:29:13-01:29:28). Like Mia and Tai, Allison loses control during the manipulation of her facial features in the makeover scene. Mia's hair never appears curly again. Tai's character only appears on screen with heavy makeup. Even Allison, who challenges Claire's niceness during the makeover, like other teenage female subjects, does not revert back to her old looks.

Manipulation of clothing style

Apart from the forceful manipulation of her physical appearance, the teenage female subject that undergoes the makeover process loses control over how she chooses to dress herself, with the transformation of her wardrobe choices. As Maryn Wilkinson comments, *The Breakfast Club*'s Allison is transformed "from a rebellious, creative and lower-class outsider into a lace-wearing, virginal bride" (386). Along with being deprived of her heavy black eyeshadow, Allison is also deprived of her freedom to wear an all-black attire. During the makeover, Allison is fitted into a pastel pink dress with frills and an added headband, a Claire-liked fashion choice who also wears a dress of pale pink hue (01:31:49-01:31:51). This suggests Claire's disciplinary role over Allison. Allison's body is molded into "patterns of conformity" (Garland 879). Like Allison, Mia and Tai's bodies are also "worked upon towards norms of perfection, slimness" and an additional flair of "sexiness" (Jackson and Vares 347). Cher cuts Tai's pastel t-shirt into a crop top, revealing her midriff to show her "sexiness" (00:26:53-00:26:57). She also trains Tai to "squeeze up her buttock" to tone up her body and slim down her figure for more well-fitting clothes (00:27:05-00:27:10).

Despite the fact that Mia remains in her school uniform during the makeover process, the initiator of the makeover, her grandmother Clarisse, forces Mia to wear stockings instead of long black socks to school. Unlike other disciplined teenage female subjects who lose control over their body, Mia attempts to resist her grandmother's orders, opting for her usual knee-high black socks for school. In spite of her efforts to challenge the doer of the makeover and her grandmother, she still loses control over her body as she changes into stockings during the car ride back to the private setting of the Genovian consulate, where the makeover took place, to show that she has dutifully changed her clothing style (00:25:10-00:25:37). From a Foucauldian perspective, the teenage female subjects in the makeover process shed their former ways of dressing, and upon contact with the doer of the makeover and their post-makeover audience, her body is "required to be docile

in its minutest operations" (Foucault 156). Contrary to Feona Attwood and Ruth Deller's comment that the teenage female subject can "construct her own performance of femininity", Allison, Tai and Mia's post-makeover self has no control over her own femininity from the moment the makeover process begins. The power of control is delegated to the doers of their makeover who construct the subject's presentation of her physical self. The teenage female character loses control of her body as she goes through the doer's disciplinary training of her muscles and an overhaul of her wardrobe to fit into clothes that perform to conform.

Speech Training

Beyond the manipulation of their facial features and their clothing choices, the teenage female character who undergoes the makeover process also loses control over her speech through the disciplinary speech training. Given the lack of speech training during the makeover scene in *The Breakfast Club*, this aspect of the makeover is perhaps best exemplified in the other case studies, specifically *Clueless*. Cher expresses disgust towards Tai's "vaguely 'New York' accent" (Wald 61). During the makeover, Cher indicates that "we need to work on your accent and vocabulary" (00:26:22-00:26:27). Like a prisoner, Tai is treated like a marginalized individual of society, a "verbal outsider through poor grammar, frequent use of the word shit, and general inarticulacy. (O'Meara 140). Similarly, Mia is given etiquette lessons on "how to walk, talk, sit, stand, eat, dress like a princess" (00:09:54-00:09:59). During the doer's disciplinary speech training sessions, the teenage female character who undergoes the makeover is disciplined to mimic the accents and use of vocabulary of the doer, stripping of her native ways of expressing herself verbally.

Conclusion

From a Foucauldian perspective of disciplinary measures, imprisonment and control, the teenage female characters who undergo the makeover process are engaged in the disciplinary practices initiated by the doers of their makeover, thereby losing their control over their body during these private makeover sessions. In fact, the makeover process has seemingly irreversible consequences as Mia, Tai and Allison are disciplined not to revert back to their old self visually and linguistically. In promotional materials of such teen films, their former existence prior to the makeover is entirely eradicated as the post-makeover teenage female character is depicted with no traces of her former self. The makeover segment, along with its upbeat selection of background music muddles the disciplinary

elements of the makeover routine, disguising the montage as a playful scene rather than a darker superficial troupe that literally translates the teenage female character's surrender of control over her body. Perhaps, given the focus on teenage female characters' makeovers in traditional scholarly research, an area for future research could be the analysis of teenage male makeovers and how they contrast to that of the female's. Indeed, along with the change in hairstyle, facial presentation, clothing and manners of speech, the teenage female character becomes a *docile body* in its entirety that is controlled to obey the doer's instructions, signifying her loss of control over her individuality.

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