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The Impact of Biometric Systems at EU Outside Borders on the Human Rights of Irregular Migrating Women

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Abstract

At first glance, new technologies seem to be the ideal solution for a lot of issues. Namely, technology has been providing the EU border management to be able to cope with the vast number of irregular migrants arriving and being processed each day. Biometric systems appear to be the perfect tool to provide fair and quick access to protection for asylum seekers. However, not all of the risks and benefits that come with the implementation of biometric systems are fully known yet. In other fields, issues in the practice of these technologies were reported concerning the consistency and fairness towards women for biometric systems and their underlying algorithms. This thesis aims to examine whether the implication of biometric systems at the EU outside borders poses a risk for the human rights of irregular migrating women or not. Due to the fast-changing nature of the topic, this thesis provides a contemporary overview of the current legal framework and other contributing factors concerning the application of biometric systems and the human rights of women, and on how gender takes on an important role regarding algorithmic discrimination of irregular migrating women.

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List of Abbreviations

ACLU	American Civil Liberties Union
ADM	Automated Decision-Making
AFIS	Automated Fingerprint Identification System
AI	Artificial Intelligence
CEAS	Common European Asylum System
CEDAW	Convention on the Elimination of All Forms of Discrimination against Women
CFREU	Charter of Fundamental Rights of the Geneva European Union
CIR	Common Identity Repository
CoE	Council of Europe
ECHR	European Convention on Human Rights and Fundamental Freedoms
ECRIS-TCN	European Criminal Records Information System for Third-Country Nationals
ECtHR	European Court of Human Rights
EDPS	European Data Protection Supervisor
EES	Entry/Exit System
ETIAS	European Travel Information and Authorisation System
EU	European Union
Eurodac	European Asylum Dactyloscopy Database
Europol	European Union Agency for Law Enforcement Cooperation
eu-LISA	European Union Agency for the Operational Management of Large-Scale IT Systems in the Area of Freedom, Security and Justice
FGM/C	Female Genital Mutilation or Cutting
FRA	European Union Agency for Fundamental Rights

Frontex	European Border and Coast Guard Agency
GDP	Gross Domestic Product
GDPR	General Data Protection Regulation
ICCPR	International Covenant on Civil and Political Rights
ICESR	International Covenant on Economic, Social and Cultural Rights
IOM	International Organization of Migration
MS	Member States
NGO	Non-Governmental Organisation
SBP	Smart Border Package
SIS	Schengen Information System
TCN	Third-Country National
TFEU	Treaty on the Functioning of the European Union
UDHR	Universal Declaration of Human Rights
UN	United Nations
UNHCR	United Nations High Commissioner for Refugees
VIS	Visa Information System

Introduction

The tragic, yet inevitable situations of ongoing wars, conflicts and persecution worldwide constantly increase the number of people who are forced into displacement from tended homes and family comforts. In 2018, the world witnessed a new peak of 70.8 million people in total who were forcibly displaced − 13.6 million of these people were displaced in 2018 alone. This is an outcome of 37'000 displaced people per day and 25 people per minute.[1]

A growing number of asylum seekers are women.[2] They are considered as an especially vulnerable group in migration due to their gender, which is the main reason that women are more often victims of sexual- and gender-based violence during conflicts, the escape route and also in the host country.[3] This vulnerability can even increase due to structures that are not considering a gender perspective and forget that especially migrant women suffer from gender inequality and have not the same resources than men do and thus are more vulnerable. Gender blind structures and legislations in migration roots in lack of data on women due to a biased perception of the phenomenon.[4]

These large numbers of irregular migrants impacted many overwhelmed reception countries, such as the European Union (EU). The EU realised that to keep up with the demands at the borders, they had to provide new solutions to efficiently record irregular migrants, so that the enrolment for the asylum process can be conducted quickly, safely and diligently. In order to have an improved recording procedure at EU borders, new technologies have been and adopted. Biometric identification systems such as facial recognition systems and fingerprints, are promising to speed up the registration procedure to minimize the waiting time at borders. These technologies are from the EU not only used to improve the reception, but also to securitize the phenomenon of irregular migration. Biometric systems allow the EU to better control entries and exits at borders, which aims to regulating irregular migration flows and fighting international crime such as terrorism, trafficking in human beings and smuggling. The fact that the same biometric systems are used to record irregular migrants but also to uncover crimes, leads to following research question: *How does the securitization of the EU outside*

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[1] *Global Trends Forced Displacement in 2018* (UNHCR 2019) 2
[2] *Women and girls on the move. A gender analysis of mixed migration from the Middle East to Europe* (Mixed Migration Platform 2016) 1
[3] Jenny Birchall, *Gender, Age and Migration: An extended briefing* (BRIDGE, UK: Institute of Development Studies 2016) 3
[4] *Action against Sexual and Gender-Based Violence: An Updated Strategy* (UNHCR Division of International Protection 2011) 5

borders impact the application of biometric systems that are used for the recording of irregular migrants?

At first glance, biometric systems seem like an ideal solution to provide fair and fast access as protection for asylum seekers. However, shortly after using biometrics for security purposes, many issues in other fields of application were reported concerning the consistency and fairness for both the biometric systems and their underlying algorithms.

One of the most disturbing examples concerns Google Photos. When put in practice, the implemented facial recognition algorithm identified two dark-skinned Americans as gorillas.[5] Facial recognition algorithms that are used for programs such as Google Photos are also used for biometric facial recognition systems. Further research showed that a reason for such wrong identifications can be flawed or biased algorithms, which in some application fields, such as human resources, might develop a gender bias. For instance, algorithms are used to improve the recruiting process systems that preselect suitable candidates for job openings. This approach would normally be extremely beneficial to both the employer and candidate. Yet some cases have surfaced where female applicants have wrongfully not been preselected by an algorithm to advance in the recruitment process due to their gender.[6]

This leads to the assumption that, if a facial recognition system with an underlying algorithm can be biased, and if algorithmic systems are already showed to have gender biases, then facial recognition systems also can develop a gender bias. Moreover, there is a possibility that a facial recognition system can become gender biased. This issue raises the second research question of this thesis: *What are the main factors that make biometric systems gender biased?*

Further research on biometrics revealed that wrong identifications through the application of biometric fingerprint systems have negatively affected asylum seekers in the past. Such mistakes can be far reaching and deprive affected asylum seekers from accessing international protection. Thus, the fourth research question for this thesis is the following: *What are the practical problems in the application of biometric systems related to women?*

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[5] Maggie Zhang *'Google Photos Tags Two African-Americans As Gorillas Through Facial Recognition Software'* (Forbes, 2015) available at <https://www.forbes.com/sites/mzhang/2015/07/01/google-photos-tags-two-african-americans-as-gorillas-through-facial-recognition-software/#301f63f2713d> accessed on 28 May 2019

[6] Jeffrey Dastin *'Amazon scraps secret AI recruiting tool that showed bias against women'* (Reuters, 2018) available at <https://www.reuters.com/article/us-amazon-com-jobs-automation-insight/amazon-scraps-secret-ai-recruiting-tool-that-showed-bias-against-women-idUSKCN1MK08G> accessed on 2 June 2019

Women are in an additional danger when using biometrics since there is a lack of data that would normally allow for the migration process to be better tailored to the needs of women. It raises the question if algorithms in biometric systems used at the borders could potentially pose a threat to women as well. This leads directly to the following important question, which is *What are the main human rights concerns regarding women?*

All of the risks and benefits that come with the implementation of biometric systems are not yet fully known.[7] Both the field of technology and migration is quickly changing, and, because of the vulnerability of displaced persons, it is a priority to avoid any additional harm. Especially women in migration are suffering from failing protective structures. Therefore, it is crucial to conduct this analysis at this very moment, before further issues create a more destructive trend of discrimination. These yet unresolved research questions finally lead to the following hypothesis that is aimed to be verified or falsified within the scope of this thesis:

The implication of biometric systems at the EU outside borders poses a risk for the human rights of irregular migrating women since women are often forgotten in migration studies and in technological development. It is possible that, since women are more vulnerable than men in the context of forced migration, gender blindness in technology combined with the venerability with migration poses a greater risk of exposing women to harmful structures at borders.

Methodology

The research method for this thesis is mainly an analysis of academic literature and attending expert-panels on human rights and technology through the lens of gender impact.

The literature reviewed are books, journals, reviews, statements, reports and studies. The point of the research was to analyse opinions from several stakeholders with different points of views. To do so, international organizations, NGOs, EU agencies and Expert analysis of the current situation concerning the impact of EU borders, laws and technologies on gender, mainly women, was analysed. Furthermore, the available data and statistics from international organizations such as NGO's and governments were examined. In addition, publications, communications, briefings and the web pages from official EU bodies were taken under

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[7] *'Biometric data in large EU IT systems in the areas of borders, visa and asylum – fundamental rights implications'* (European Union Agency for Fundamental Rights FRA, 2014) available at <https://fra.europa.eu/en/project/2014/biometric-data-large-eu-it-systems-areas-borders-visa-and-asylum-fundamental-rights> accessed on 5 June 2019

consideration. Due to the fast-changing nature of the topic, the aim of the research for this was to focus on the most recent publications and examples concerning border security and gender discrimination of migrating females. The vast majority of the reviewed literature was published within the past three years.

The legal analysis focuses on the relevant international national primary and secondary law. The fact that the legal framework around migration and security are undergoing a considerable change at the moment, lead a need to conduct a closer examination of legislative proposals. Due to the nature of studying and using these proposals, this research found that there is no case law directly related to the described issue.

In the process to gain a broad understanding of the complex biometric technology used for border security, one expert interview was conducted. Furthermore, the research builds on the RightsCon 2019 as it is the most relevant conference on technology and human rights. The RightsCon took place in May 2019 in Tunis. The aim of attending the conference was to gain a comprehensive idea of human rights issues related to technology. This is necessary information to gather and examine because it is difficult to access the latest information and developments due to the rapidly changing nature of this field. Moreover, the conference gave a deeper insight in thanks to the representatives from the technology sector, government and human rights defending NGO's who provided a varied picture from different points of views. Within four days, 15 panels, three round tables and two workshops had been attended.

Structure

The structure chosen for this thesis has been given careful consideration to ensure that each point builds on top of each other to give a comprehensive overview of the human rights issues, studies, law, political and technical developments and impact of biometric usage at the EU outside borders that concern irregular migrating women.

Chapter one outlines the issue of gender roles in society and how the roles of women impact their representation in public and private sectors. Also, the chapter describes how data on women is related to policies and biases. Further along this trend, the chapter examines how gender bias impacts migrating women. Important definitions are present throughout this to provide a better understanding of the complex issue of migration. In the final portion, the chapter names the most relevant law related to migration, women and equality.

The main focus of chapter two is on biometric systems. After framing the situations biometric systems are applied to at the EU outside borders, how law regulates the application of this new technology and connects it with human rights shall be inspected. Next, the technical aspect of biometric systems is explored. Examples are given on how the application could interfere with human rights and what this means for women's rights. In this context, the available data on migrating women and gender biases is being connected to the performance of biometric systems.

Chapter three has a strong focus on changes in the legal framework concerning databases with biometric information on women irregularly migrating into the EU. Trends such as interoperability and securitization of migration are described and explored. On behalf of findings from chapter one and two, future trends using biometrics are analysed for their possible influence on the use of personal data and what this means for women and their human rights.

The conclusion summarises the most important findings of the chapters. It is hoped that the findings contribute to knowledge about the negative and positive impacts on women's rights in the context of the application of biometric systems and to formulate recommendations.

1 The Impact of Biases on Irregular Migrating Women

Everyone develops stereotypes based on experiences from their social environment; therefore, everyone is consciously and unconsciously biased.[8] Awareness of bias can help to identify and prevent intentional discrimination as well as support a more social society with fairer structures and regulations that include everyone's rightful needs. A conscious bias is *"the action of supporting or opposing a particular person or thing in an unfair way, because of allowing personal opinions to influence your judgement."*[9] The bias is unconscious when *"the person with the bias is not aware of it."[10]* People from the same social class, educational background, ethnicity, religion or from the same gender often develop similar experiences as a result of shared stereotypes and biases in their environments.[11] Gender biases are particularity common since every culture has predefined roles for gender.[12] For women, this is insofar dangerous since it keeps discriminative structure going, and it does not change harmful structures and provisions.[13] The phenomenon of migration is also governed by negative stereotypes, which lead to harmful migration policies. This part of the thesis examines the perilous impacts of gender role biases in the interests of how the different aspects of it can influence the treatment of irregular migrating women.

1.1 Gender-Roles and the Lack of Female Representation

Gender encompasses not only the category of 'woman' or 'man,' but also it describes the social construct of femininities and masculinities within a society or a culture. The gender construct has become the creator of how any society is organized.[14] Gender, as a construct, pre-frames domains and positions of women and men in society by labelling roles, ability and power. Being in a position of power is essential for the purposes of having the ability to impact decisions

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[8] Andrée Pomerleau, Daniel Bolduc, Gérard Malcuit and Louise Cosette, 'Pink or Blue: Environmental Gender Stereotypes in the First Two Years of Life' (1990) 22(5) Sex Roles. A journal of Research, Kluwer Academic Publishers-Plenum Publishers 359

[9] *'Bias'* (Cambridge Dictionary, 2019) available at <https://dictionary.cambridge.org/dictionary/english/bias> accessed on 28 June 2019

[10] Ibid

[11] Andrée Pomerleau, Daniel Bolduc, Gérard Malcuit and Louise Cosette, 'Pink or Blue: Environmental Gender Stereotypes in the First Two Years of Life' (1990) 22(5) Sex Roles. A journal of Research, Kluwer Academic Publishers-Plenum Publishers 359

[12] Judith Lorber and Susan A. Farrell, *The social construction of gender* (SAGE Publications 1991) 111

[13] Caroline Criado-Perez, *Invisible Women. Exposing Data Bias in a World Designed for Men* (Chatto & Windus 2019) 265

[14] Judith Lorber and Susan A. Farrell, *The social construction of gender* (SAGE Publications 1991) 111

where money, knowledge and effort is spent.[15] Women need an equal position of power to defend their agenda and their needs as well. When women are able to purpose their agendas in a just manner, this helps to become a more balanced and fair society and to overcome stereotypes. However, women are often unable to gain a position of power due to assigned roles in society. The assigned role for women and men in a society are associated with specific qualities. For example, one assigned role includes that men are strong and the main supplier for their family while women are weak and incapable. These labels generate stereotypes and gender bias.[16] And this, in turn, determines the access women have to power. Gender is a primary way to explain a relationship of power. Power means access to resources and to the way society is structured. Power provides men better access to resources due to their assigned role in most cultures.[17] Consequently, this situation makes it very difficult for women to overcome the assigned role. It is a result of gender construction that women do not have the same access to some areas in society as men.[18] This impacts the representation of women in all aspects of society and in the public and private sectors.

The representation of women differs from society to society and from culture to culture. Although there are countries who include women to participate in more politics and positions of power,[19] there are identifiable global trends that confirm how even women with more pronounced political situations are overall represented less and also given less opportunities for such positions in general.[20] For example, a study from Britain found that women in politics are more likely to promote women's issues, family policies, care and education in the political agenda than men. Moreover, the study found that women invest in bills concerning these topics.[21] Comparable studies from other countries came to very similar results.[22] The McKinsey

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[15] Caroline Criado-Perez, *Invisible Women. Exposing Data Bias in a World Designed for Men* (Chatto & Windus 2019) 266

[16] Andrée Pomerleau, Daniel Bolduc, Gérard Malcuit and Louise Cosette, 'Pink or Blue: Environmental Gender Stereotypes in the First Two Years of Life' (1990) 22(5) Sex Roles. A journal of Research, Kluwer Academic Publishers-Plenum Publishers 359

[17] Ruba Salih, 'The Relevance of Gender in/and Migration' [2011] CARIM Research Reports 1

[18] '*CEDAW- Principle of Substantive Equality*' (UN Women, 2014) available at <https://www.youtube.com/watch?v=SZR0RJtghyY> accessed on 20 June 2019

[19] '*MGI Power of Parity. Full Report*' (McKinsey&Company, 2015) 11 available at <https://www.mckinsey.com/~/media/McKinsey/Featured%20Insights/Employment%20and%20Growth/How%20advancing%20womens%20equality%20can%20add%2012%20trillion%20to%20global%20growth/MGI%20Power%20of%20parity_Full%20report_September%202015.ashx> accessed on 20 May 2019

[20] Caroline Criado-Perez, *Invisible Women. Exposing Data Bias in a World Designed for Men* (Chatto & Windus 2019) 267

[21] Luke Blaxill and Kaspar Beelen '*Women in Parliament since 1945: have they changed the debate?*' (History & Policy, 2016) 1-3 available at <http://www.historyandpolicy.org/policy-papers/papers/women-in-parliament-since-1945-have-they-changed-the-debate> accessed on 6 June 2019

[22] Ibid.

Global Institute discovered in a study on gender equality that 84% of the 91 countries represented in the study have an extremely high inequality of female political representation.[23] The underrepresentation of women in politics, and positions with decision-making power, not only impact where money is invested, but also influence whether data about women in specific contexts is collected or not.[24]

1.2 Gender Bias in Migration

The collection of gender-sensitive data is missing in migration. Phenomena like migration are gendered as well, and, for a long time, it was associated only with men.[25] The reason why women have been less visible can also be linked to our biased perception of migration. Women have always been participating in migration movements. Since the 90s, female migrants have made up 51 - 52% of the total migration stock towards Europe every year.[26] Women migrate because of their prescribed role and the limited possibilities that are connected to it. As a consequence of how women migrate, feminization in migration is increasingly mentioned in the public discourse even though the numbers have been stable since then. This is not a result of an increase in the number of female migrants towards Europe, but women are increasingly applying for asylum themselves and not within a family unit.[27] Therefore, women are now more apparent in asylum statistics. With this new appearance, rather than talking of feminization in this context, one should refer to it as the visibility of women in migration. How we look at migration influences how we treat and regulate it, and this, in turn, impacts the safety of women and their migration experience. The safety of women and their migration experience is dependent on how people treat and regulate it.

Not only does the importance of the visibility of irregular migrating women impact migration policies because they push an agenda with women's issues, the visibility of women

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[23] *'MGI Power of Parity. Full Report'* (McKinsey&Company, 2015) 9 available at
<https://www.mckinsey.com/~/media/McKinsey/Featured%20Insights/Employment%20and%20Growth/How%20advancing%20womens%20equality%20can%20add%2012%20trillion%20to%20global%20growth/MGI%20Power%20of%20parity_Full%20report_September%202015.ashx> accessed on 20 May 2019
[24] Caroline Criado-Perez, *Invisible Women. Exposing Data Bias in a World Designed for Men* (Chatto & Windus 2019) 265
[25] *The Female Face of Migration* (Caritas Internationalis n.d.) 2
[26] *Trends In International Migrant Stock: the 2017 revision* (United Nations - Department of Economic and Social Affairs Population Division - POP/DB/MIG/Stock/Rev.2017 2017) 13
[27] *'Women and International Migration'* (Division for the Advancement of Women Department of Economic and Social Affairs United Nations, n.d.) 1 available at
<https://www.un.org/en/development/desa/population/migration/events/coordination/3/docs/P01_DAW.pdf> accessed on 11 May 2019

in their host countries influences policies as well. [28] Migrant women are thus not present in political debates. In turn, the visibility of migrated men is very commonly used by policy makers who are politically oriented to the right to create fear and push for anti-migration policies.[29] Only now, with the visibility of women in migration due to more women traveling alone and applying for asylum, scholars are starting to talk about women in migration.[30] Therefore, policy makers can take more notice of the trends of women with a more comprehensive understanding of migration. The 'World Survey on the Role of Women in Development' conducted by the UN Women organisation stresses the urgent need for more data on gender and migration.[31] Such data is essential to take into consideration for new migration policies and programmes that are tailored to women's needs. A lack of policies customized to women not only limits their access to migration and international protection, but it also harms women because it can lead to situations where women are exploited for the border managers lack the understanding of how to help women in particular with the process.[32] A lack of private and protected sleeping areas for women in refugee camps is a commonly used example to highlight the lack of gender-sensitive structures. It can be assumed that data on migration is gender blind because of a predominant male representation in positions that make decisions on migration policies that are influenced by gender bias.[33]

Therefore, biased policies even harm women and lead to further unequal distribution of power between the genders. This in turn lets the pre-framed bias constructs in society continue.[34] The underrepresentation of women in migration policy leads to male-focused migration policies and ideologies.[35] This can clearly be seen in the collected data on migration

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[28] Tam O'Neil, Anjali Fleury and Marta Foresti *'Women on the move - Migration, gender equality and the 2030 Agenda for Sustainable Development'* (Swiss Agency for Development and Cooperation SDC, 2016) 5-6 available at <https://www.odi.org/sites/odi.org.uk/files/resource-documents/10731.pdf> accessed on 29 May 2019

[29] *UNHCR Handbook for the Protection of Women and Girls* (UNHCR 2008) 67

[30] *Trends In International Migrant Stock: the 2017 revision* (United Nations - Department of Economic and Social Affairs Population Division - POP/DB/MIG/Stock/Rev.2017 2017) 5

[31] *'World Survey on the Role of Women in Development'* (The Research and Data section of UN Women, 2014) 19-22 available at <http://www.unwomen.org/-/media/headquarters/attachments/sections/library/publications/2014/world-survey-on-the-role-of-women-in-development-2014-en.pdf?la=en&vs=3045> accessed on 9 June 2019

[32] *Action against Sexual and Gender-Based Violence: An Updated Strategy* (UNHCR Division of International Protection 2011) 5

[33] Silvia Pedraza, 'Women and Migration: The Social Consequences of Gender' (1991) 17 Annual Review of Sociology 304

[34] Caroline Criado-Perez, *Invisible Women. Exposing Data Bias in a World Designed for Men* (Chatto & Windus 2019) 265

[35] Ruba Salih, 'The Relevance of Gender in/and Migration' [2011] CARIM Research Reports 1

- which is gender blind.[36] Eurostat, the official EU database, provides statistics on irregular migration into Europe and even has a sub-folder with the title 'age and gender on first time applicants'.[37] For some reason, there is no graphic or analysis that shows the age-distribution of women whereas there is one of the male immigrants. In addition to this, they do not collect data, or do not share it, on the gender of minors entering the EU.[38] Either way, the lack of data is already having a major negative impact for all migrating people - especially for women who are already hidden from public view and data collected.

1.3 Why Women Move: A Look at the Vulnerabilities of the Gender

Within the role of women or men, irregular migration has different implications.[39] Even though women make up 51-52% of the people migrating into the EU, they make up only one third of asylum applicants in the EU.[40] The main reason for this is women, rather than men, migrate more often for the purpose of family reunion, and they are, therefore, not as visible on the asylum statistics. Women migrate because of their prescribed role and the limited possibilities that are connected to it.[41] This is the result of women having less access to education, which could help to find qualified work where no migration is needed, but also a lack of education limits resources to make informed decisions on how to migrate. Female migration correlates with no access to labour market, education, networks and economic dependence.[42] With what little information is available on women migration, the exact reasons why women have to leave their home country are not well elaborated.[43] Granting all of this, what is known is that the reasons are closely linked to their gender roles in the home country.[44] Often women suffer from

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[36] *'Data strengths & limitations'* (Migration Data Portal, 2019) available at <https://migrationdataportal.org/themes/gender#data-strengths-amp-limitations> accessed on 7 July 2019

[37] *'Asylum Statistics'* (Eurostat, 2019) available at <https://ec.europa.eu/eurostat/statistics-explained/index.php/Asylum_statistics#Age_and_gender_of_first-time_applicants> accessed on 1 July 2019

[38] Ibid.

[39] Ruba Salih, 'The Relevance of Gender in/and Migration' [2011] CARIM Research Reports 1

[40] *Women and girls on the move. A gender analysis of mixed migration from the Middle East to Europe* (Mixed Migration Platform 2016) 1

[41] *'Women and International Migration'* (Division for the Advancement of Women Department of Economic and Social Affairs United Nations, n.d.) 2 available at <https://www.un.org/en/development/desa/population/migration/events/coordination/3/docs/P01_DAW.pdf> accessed on 11 May 2019

[42] *'Women and International Migration'* (Division for the Advancement of Women Department of Economic and Social Affairs United Nations, n.d.) 1 available at <https://www.un.org/en/development/desa/population/migration/events/coordination/3/docs/P01_DAW.pdf> accessed on 11 May 2019

[43] *'Data strengths & limitations'* (Migration Data Portal, 2019) available at <https://migrationdataportal.org/themes/gender#data-strengths-amp-limitations> accessed on 7 July 2019

[44] Ruba Salih, 'The Relevance of Gender in/and Migration' [2011] CARIM Research Reports 6

discriminating practices that are rooted in the culture that support the wish to migrate.[45] By migrating, they hope for a higher possibility to lead an independent and autonomous life. Hence, women tend to choose target countries that have less discriminatory gender norms than their country of origin.[46] The reasons mentioned are all examples of forced migrants.

As soon as women are on the move, they are exposed to more risks compared to men.[47] Women have less means to educate themselves about their target country for a number of reasons such as a smaller circle of acquaintances or from less access to a main source of information like the internet.[48] This makes women more vulnerable to be exploited by traffickers during the escape. Albeit, it has to be mentioned that women are very aware of the risks that migration routes hold, they still take on the risky journey in order to have more freedom and security in the long turn.[49]

For irregular migrants, the most important part of the border-crossing is the actual interaction with law enforcement. Border-checkpoints are a moment of massive stress and fear. Irregular migrants are anxious because they know that access will only be given to them if they can apply for asylum. The border staff have a role of power, and the migrants are in an inferior role because they are in need of international protection.

Several actions can be taken to facilitate a gender-sensitive border-management. Having border staff that is well informed and trained on gender-related topics is a must to ensure a safe handling of issues that require special care. The European Union Agency for Fundamental Rights (FRA) criticizes that border guards have not had enough training to identify victims, and they lack the knowledge on how to intervene correctly.[50] Due to the fact that migration is perceived as a primarily male phenomenon, women have been seen as the accompaniment of their husbands or male family members. It was not questioned if they might have false

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[45] *Women and girls on the move. A gender analysis of mixed migration from the Middle East to Europe* (Mixed Migration Platform 2016) 1-6

[46] Tam O'Neil, Anjali Fleury and Marta Foresti *'Women on the move - Migration, gender equality and the 2030 Agenda for Sustainable Development'* (Swiss Agency for Development and Cooperation SDC, 2016) 5-6 available at <https://www.odi.org/sites/odi.org.uk/files/resource-documents/10731.pdf> accessed on 29 June 2019

[47] *UNHCR Handbook for the Protection of Women and Girls* (UNHCR 2008) 67

[48] *Working Group on the Digital Gender Divide Recommendations for action: bridging the gender gap in Internet and broadband access and use* (Broadband Commission for Sustainable Development 2017) 17

[49] *'The Project'* (Iborderctrl, 2016) available at <https://www.iborderctrl.eu/The-project> accessed on 11 May 2019

[50] *'Women refugees at high risk of being victims of gender-based violence'* (European Union Agency for Fundamental Rights FRA, 2016) available at <https://fra.europa.eu/en/press-release/2016/women-refugees-high-risk-being-victims-gender-based-violence> accessed on 11 May 2019

documents and are being trafficked.[51] This assumption exists subsequently for data on migration is gender blind. FRA reported further that, unfortunately *"no Member State collects data on reported incidents of gender-based violence towards female refugees that have just arrived or need international protection."*[52] The European Commission has identified the lack of data as an issue and works with different stakeholders to collect more data on women that have been trafficked to hopefully improve the standards.[53] The lack of data, in turn, does not reveal how important sufficient training for the staff is. The border staff team should consist of people with different expertise. Border guards cannot be expected to have an overview of all the different issues and dimensions while having the main task of keeping borders safe. This is just not manageable. One of the changes that should be realised immediately is to have more female staff. Female border guards should be equally distributed to the female asylum applicants, which make one third at the moment.[54]

1.4 Gender Equality as Human Right

To fight gender bias and create more visibility of women, states often implement measures to reach gender equality. Unfortunately, these measures are often misinterpreted or the measures target the outcome instead of the cause. Usually, states do not take into account that providing equal resources at the start of a problem is not setting up a truly fair situation for women to hold their own in a male-controlled society.[55] The implemented measures taken must consider that equal resources do not produce true equality between the genders.

Gender equality is a core value of the United Nations (UN), and it is a human right written down in the Universal Declaration of Human Rights (UDHR) in Article 1 and 2.[56] Moreover, in nearly every human rights treaty, discrimination based on gender is prohibited.

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[51] *The Female Face of Migration* (Caritas Internationalis n.d.) 2

[52] *'Women refugees at high risk of being victims of gender-based violence'* (European Union Agency for Fundamental Rights FRA, 2016) available at <https://fra.europa.eu/en/press-release/2016/women-refugees-high-risk-being-victims-gender-based-violence> accessed on 11 May 2019

[53] Commission, 'Second report on the progress made in the fight against trafficking in human beings (2018) as required under Article 20 of Directive 2011/36/EU on preventing and combating trafficking in human beings and protecting its victims' (Communication) COM(2018) 777 final 3

[54] *Women and girls on the move. A gender analysis of mixed migration from the Middle East to Europe* (Mixed Migration Platform 2016) 1

[55] *UNHCR Handbook for the Protection of Women and Girls* (UNHCR 2008) 9

[56] Universal Declaration of Human Rights (adopted 10 December 1948) UNGA Res 217 A(III) (UDHR) art 1, art 2

This includes also the International Covenant on Civil and Political Rights (ICCPR)[57] and the International Covenant on Economic, Social and Cultural Rights (ICESCR).[58] Their common Article 3 ensures *"the rights to equality between men and women in the enjoyment of all rights."*[59] In the international framework, the Convention on the Elimination of All Forms of Discrimination against Women (CEDAW) is the most important tool to realize gender equality. Not only because of the high number of ratifications, but also because of the approach that is used by CEDAW to reach gender equality.[60]

There are different approaches to reach gender equality. The formal approach disregards that women and men are treated differently in society. It follows the male standards and neglects the female's different role of restricted possibilities in the context of the society they are living in.[61] At first glance, the formal approach seems reasonable to reach equality because, in this approach, everyone is given an equal opportunity. However, the formal approach is not comprehensive enough to fully reach gender equality. For example, both boys and girls are allowed to go to school, and they have equal access to school. However, the described gender-role in society demands girls to help in the household and to take care of younger siblings because both parents have to work to provide for the family. This may prevent girls from attending school regularly. Equal opportunities are given, but this is not a true solution since the already disadvantaged group cannot adequately use the resources provided. As long as women have to overcome higher hurdles than men to get access and are not treated the same by society, equality in the formal approach is not fair.[62]

In comparison, the corrective approach takes into account that women do not have the same starting point due to the gender role in society. In contrary to the formal approach, the corrective approach does not try to reach equality with providing equal opportunities, but it uses equity as a tool to reach equality of outcome. Equity aims to provide everyone with what they

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[57] International Covenant on Civil and Political Rights (adopted 16 December 1966) 999 UNTS 171 (ICCPR) art 3

[58] UN General Assembly, International Covenant on Economic, Social and Cultural Rights, 16 December 1966, United Nations, Treaty Series, vol. 993, 3 art 3

[59] *'Women's Human Rights and Gender Equality'* (United Nations Office of the High Commissioner of Human Rights, 2019) available at <https://www.ohchr.org/EN/Issues/Women/WRGS/Pages/WRGSIndex.aspx> accessed on 29 June 2019

[60] UN General Assembly, Convention on the Elimination of All Forms of Discrimination against Women, 18 December 1979, United Nations Treaty Series, vol. 1125, 13

[61] *'CEDAW- Principle of Substantive Equality'* (UN Women, 2014) available at <https://www.youtube.com/watch?v=SZR0RJtghyY> accessed on 20 June 2019

[62] Ibid

need to achieve the same outcome.[63] Equity can be compared with the handicap in the sport golf. The sport acknowledges that not everyone is able to tee off the ball and reach the hole with the same amount of shots. Therefore, players with a higher handicap have another starting position. Equity is the acknowledgement that not everyone has the same starting position and some have to overcome higher hurdles than others. Hence, the attention is on the equality of outcome and not the equality of the starting point. Equity focuses on corrections in the environment that support equal access to opportunities for women and men. In the long term, this refocus leads to substantive equality by recognising differences between women and men while affirming equality.[64] This can be achieved by placing positive obligations that correct the environment and require policies to include the gender perspective in resource division and policy making. Such a positive obligation could be the installation of a nursery as a correction of the environment, so that girls can attend school regularly because they are not occupied with domestic work during school hours anymore.[65]

Substantive equality is also mentioned in CEDAW as one of the three principles for gender equality.[66] With substantive equality recorded in the convention, CEDAW recognises that gender inequality inter alia roots in society.[67] The convention acknowledges that substantive changes can take some time. Therefore, to correct these disadvantages in society, the convention suggests in Article 4 that temporary special measures should be installed to create actual equality.[68] As a result, it might be that some artificial benefits are created, yet it helps to increase the current access of women and to reduce inequality.[69] With those special measures present, they make the CEDAW one of the most important legal tools regarding non-discrimination and equality.

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[63] Amy Sun *'Equality Is Not Enough'* (Every day feminism, 2014) available at <https://everydayfeminism.com/2014/09/equality-is-not-enough> accessed on 18 June 2019
[64] *'CEDAW- Principle of Substantive Equality'* (UN Women, 2014) available at <https://www.youtube.com/watch?v=SZR0RJtghyY> accessed on 20 June 2019
[65] *UNHCR Handbook for the Protection of Women and Girls* (UNHCR 2008) 22-24
[66] UN General Assembly, Convention on the Elimination of All Forms of Discrimination against Women, 18 December 1979, United Nations Treaty Series, vol. 1125, 13 art 1
[67] *'CEDAW Frequently asked questions'* (Engender, 2013) available at <https://www.engender.org.uk/files/cedaw-frequently-asked-questions.pdf> accessed on 20 June 2019
[68] *'Frequently Asked Questions (FAQ) about CEDAW'* (UN Women, n.d.) available at <http://asiapacific.unwomen.org/en/focus-areas/cedaw-human-rights/faq#howcedawdifferent> accessed on 21 June 2019
[69] Jackie Shapiro *'CEDAW as a tool for promoting substantive gender equality'* (UN Women, n.d.) 4 available at <http://www.cedaw.org.tw/en/upload/media/Capacity%20Building/1-1The%20Mechanism%20of%20CEDAW%20Committee.pdf> accessed on 21 June 2019

Gender-equality is definitely what people have to work towards since there is no equality in society at the moment. Women and men do not have the same starting position, so there is a need for equity to make sure that everyone has the same access to protection, to education, to health, to the job market and to the chance to live an independent life. The items that create healthy and progressive individuals. Equity has the ability to elicit justice between women and men as long as substantive equality is used in the equity-making process. To measure if substantive equality is achieved, policy makers should look at the conditions of women's lives.[70] Until substantive equality is achieved, temporary special measures to artificially improve women's access have to be installed.

The transition to a more diverse representation of society in the public sphere will not only lead to a better lobby for women's issues, but also it will increase data on women in different areas and lead to regulations that do not discriminate against women. This change is inevitable if we aim for using equity. To support this transition on a political level, there needs to be a push in regulations and policies that considers the different necessities of all members of society equally.[71] Unfortunately, there are still many inequalities in regulations and different kinds of discrimination towards different groups - especially towards women.[72] Equity provides a temporary solution that can help women to enjoy protection in their home country and international protection in their target country when migrating, even during times of cultural conflict.

1.5 Legal Protection of Women

The term 'forced migration' provides a broad and general idea of why people have to flee nowadays and irregularly migrate. Forced migration acknowledges that there are other reasons that force people to migrate, such as gender-based violence against women.[73] According to the International Organization of Migration (IOM), the definition of forced migration is a *"migratory movement in which an element of coercion exists, including threats to life and livelihood, whether arising from natural or man-made causes (e.g. movements of refugees and*

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[70] *'CEDAW Frequently asked questions'* (Engender, 2013) available at
<https://www.engender.org.uk/files/cedaw-frequently-asked-questions.pdf> accessed on 20 June 2019
[71] Jane Freedman, 'Engendering Security at the Borders of Europe: Women Migrants and the Mediterranean Crisis' (2016) 29(4) Journal of Refugee Studies 568 568-571
[72] Mieke Verloo, 'Multiple Inequalities, Intersectionality and the European Union' (2006) 13(3) European Journal of Women's Studies 211
[73] Susanne Buckley-Zistel and Ulrike Krause, *Gender, Violence, Refugees (Studies in Forced Migration)* (37th edn, Berghahn Books 2019) 3

internally displaced persons as well as people displaced by natural or environmental disasters, chemical or nuclear disasters, famine, or development projects)."[74] This definition of forced migration allows to include gender-based reasons because it acknowledges that gender shapes reasons to seek international protection.[75] Scholars distinguish between 'irregular migration' and 'illegal migration.' 'Irregular migration' refers, for example, to border crossing without a valid permission to apply for asylum whereas, 'illegal migration' refers to smuggling or trafficking of human beings.[76] All of these terms have no universally accepted definition, so they can have different meanings depending on how they are used and under what circumstances.[77] This reflects the complexity and multi-layered dimensions of migration in general and underlines the necessity of using the terms 'forced' and 'irregular' migration. In this thesis, 'irregular migration' and 'forced migration' are used as synonyms, and it will include 'illegal migration', asylum applicants and refugees.

However, from a legal point of view, being an irregular migrant does not provide legal protection. Article 14 §1 UDHR guarantees the right to seek asylum and to receive protection in other countries from prosecution.[78] The controlling legal framework for the protection of refugees and displaced persons builds up the 1951 Convention relating to the Status of Refugees (hereinafter Geneva Convention) and the additional Protocol from 1976. The term defines a legal status, and, under the Geneva Convention, it is well-regulated to explain what rights individuals have with this status.[79] Refugee refers to a person who *"owing to wellfounded fear of being persecuted for reasons of race, religion, nationality, membership of a particular social group or political opinion, is outside the country of his nationality and is unable or, owing to such fear, is unwilling to avail himself of the protection of that country."*[80] Feminist scholars criticize that the idea of refugees in the Geneva Convention was shaped by a gender bias assuming that men are more politically active, and, therefore, they are more likely to being

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[74] *'Key Migration Terms'* (IOM UN Migration, n.d.) available at <https://www.iom.int/key-migration-terms#Forced-migration> accessed on 14 May 2019

[75] *'Gender and Migration'* (IOM UN Migration, n.d.) available at <https://www.iom.int/gender-and-migration> accessed on 7 July 2019

[76] *'Key Migration Terms'* (IOM UN Migration, n.d.) available at <https://www.iom.int/key-migration-terms#Forced-migration> accessed on 14 May 2019

[77] Doreen Indra, 'Gender: A Key Dimension of the Refugee Experience' (1987) 6(3) Refuge: Canada's Journal on Refugees 2

[78] Universal Declaration of Human Rights (adopted 10 December 1948) UNGA Res 217 A(III) (UDHR) art 14

[79] João Estevens *'Migration crisis in the EU: developing a framework for analysis of national security and defence strategies'* (Springer, 2018) available at <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6182341/> accessed on 25 May 2019

[80] Convention Relating to the Status of Refugees (adopted 28 July 1951) 189 UNTS 137 (Refugee Convention) art 1

persecuted.[81] As a result, they are in need of international protection. Even the use of language to form the article uses only male pronouns. Until today, no gender friendlier adaptations in the legal frameworks have been made.[82] Within the Geneva Convention and the additional Protocol exists no category which applies to women forced to flee due to gender-based violence. Forced migrants that do not fulfil the criteria from the Geneva Convention do not obtain international protection as refugees.[83] There is some international case law[84] where courts granted refugee status to women that had to escape due to gender-based violence, but there is no consensus found yet if women can qualify as a 'particular group' that needs protection. The international refugee law is shaped by the idea that refugees are predominantly men and this same concept also influenced the European Asylum Policy.[85]

States that have ratified the Convention have the positive obligation to give persons in need of international protection access to an asylum procedure. Then, with the principle of non-refoulement, which is embodied in international customary law, refugees shall not be sent back to a country where they face serious threats to their life or freedoms.[86] The formulation of states obligation, and the wide acknowledgement with 154 state parties, make the Geneva Convention a very important legal tool in the defence of refugees.[87]

Subsequently, many regional human rights frameworks have incorporated refugee rights into the regional instruments.[88] An example of this is the Charter of Fundamental Rights of the European Union (CFREU) Article 18 grants the right to asylum, and it refers to the Geneva Convention and the additional Protocol.[89] With Article 78 of the Treaty on the Functioning of the European Union (TFEU), the EU had to compile regulations and directives to determine

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[81] Susanne Buckley-Zistel and Ulrike Krause, *Gender, Violence, Refugees (Studies in Forced Migration)* (37th edn, Berghahn Books 2019) 3

[82] Doreen Indra, 'Gender: A Key Dimension of the Refugee Experience' (1987) 6(3) Refuge: Canada's Journal on Refugees 3

[83] Susanne Buckley-Zistel and Ulrike Krause, *Gender, Violence, Refugees (Studies in Forced Migration)* (37th edn, Berghahn Books 2019) 2

[84] Islam (A.P.) v. Secretary of State for the Home Department; R v. Immigration Appeal Tribunal and Another, Ex Parte Shah (A.P.), Session 1998-1999, United Kingdom: House of Lords (Judicial Committee), 25 March 1999

[85] Susanne Buckley-Zistel and Ulrike Krause, *Gender, Violence, Refugees (Studies in Forced Migration)* (37th edn, Berghahn Books 2019) 3

[86] Protocol Relating to the Status of Refugees (adopted 31 January 1967) 606 UNTS 267 (Protocol) Introductory Note

[87] Ibid.

[88] *'Asylum & The Rights of Refugees'* (International Justice Resource Centre, n.d.) available at <https://ijrcenter.org/refugee-law/> accessed on 3 July 2019

[89] EU Charter of Fundamental Rights: Charter of Fundamental Rights of the European Union [2000] OJ C364/1 art 18

how the protection of refugees exactly has to be handled. The Directive 2011/95/EU lays down *"standards for the qualification of third-country nationals or stateless persons as beneficiaries of international protection, for a uniform status for refugees or for persons eligible for subsidiary protection, and for the content of the protection-granted".*[90] Complementary to how individuals shall be protected, the Regulation (EU) 604/2013 (hereafter Dublin III) frames how the common European Asylum Policy has to be realized.[91] It established criteria from Member State of Dublin III which includes needing to examine an asylum application from a person coming from a third country or a stateless person.[92] All 28 Union Member States as well as Norway, Iceland, Switzerland and Liechtenstein are treaty members (hereafter MS refers to all Member States of the Dublin Regulation). The Dublin Regulation has been revised three times, and there is, currently, a proposal for Dublin IV being discussed between the Commission and the Parliament.[93]

Conclusion

The fact that gender roles have a huge impact on all areas of our lives, especially areas that are wrongly associated with men, and are unconsciously very present, deepens gender biases. The unequal access and distribution of power between women and men results in a stagnation of women empowerment.

Women often migrate to escape from structures that lead to discrimination or even violent practices towards women. Unfortunately, women often become victims of human trafficking, or they are forced into labour work. To provide a comprehensive protection under the law, it is needed to include reasons for asylum that are rooted in gender-discriminating practices. However, to do so, more information is needed on gender-based reasons for escape.

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[90] Directive (EU) 2011/95 of the European Parliament and of the Council of 13 December 2011 on standards for the qualification of third-country nationals or stateless persons as beneficiaries of international protection, for a uniform status for refugees or for persons eligible for subsidiary protection, and for the content of the protection granted (recast) [2011] OJ L337/9 art 1

[91] Regulation (EU) No 604/2013 of the European Parliament and of the Council of 26 June 2013 establishing the criteria and mechanisms for determining the Member State responsible for examining an application for international protection lodged in one of the Member States by a third-country national or a stateless person (recast) [2013] OJ L180/31 Recitals 2

[92] Ibid. Recitals 2

[93] Commission, 'Proposal for a regulation of the European Parliament and of the Council establishing the criteria and mechanisms for determining the Member State responsible for examining an application for international protection lodged in one of the Member States by a third-country national or a stateless person (recast)' (Communication) COM(2016) 270 final/2 2016/0133 (COD)

The gender biases can hardly be uncovered when there are no more investments in research to collect data on women and their needs. Without collecting more data, the gender-data-gap remains and policies cannot target women. To solve this, not only will more data on women need to be collected, but also the concept of gender bias has to be kept in mind when conducting research – especially when conducting research in male-dominated fields. For that reason, this thesis analyses the impact of biometrical technologies on women's rights under the lens of gender.

2 Biometric Systems under the Law and their Impact on Women

This part of the thesis will center on how the current law framework applies, and it shall examine if it covers the needs and rights of women seeking international protection. Women are one of the most vulnerable groups, for they are likely to be negatively affected by gender bias or even suffer from multiple discriminations not solely based on gender. Therefore, this chapter will also explore on what grounds that border management is established, and how the application of biometric systems, under the EU border management, comply with the law to elaborate if there is an additional risk for women due to their gender.

2.1 Common European Asylum System

The Common European Asylum System (CEAS) is a framework built by the EU to establish a common procedure for international protection for asylum seekers and refugees within the EU. The legal ground for the CEAS is given with Article 78 of the Treaty on the Functioning of the European Union (TFEU).[94] To fulfil the duty of building a common policy on asylum, subsidiary protection, temporary protection and ensuring compliance with the principle of non-refoulement, the EU created five main legislations that form together CEAS.[95] Those five legislations are Asylum Procedure Directive, Reception Conditions Directive, Qualification Directive, Dublin Regulation and Eurodac Regulation.[96] Despite the fact that these legislations are all interlinked, this thesis will only regard the Dublin and Eurodac Regulations as these are the regulations which uses biometric technology to oversee the use of biometrics in the migration process role.[97]

The Dublin Regulation, first signed in 1990, determines which Member State has to proceed with each of the asylum applications. Furthermore, it foresees that an asylum application can be made only in one state that is part of the Dublin Regulation. Then the country

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[94] *An Introduction to the Common European Asylum System for Courts and Tribunals* (European Asylum Support Office - International Association of Refugee Law Judges European Chapter under contract to EASO 2016) 13

[95] Consolidated Version of the Treaty on the functioning of the European Union [2012] OJ C326/47 art 78

[96] *'The Common European Asylum System (CEAS)'* (European Commission, 2016) available at <https://ec.europa.eu/home-affairs/sites/homeaffairs/files/what-we-do/policies/european-agenda-migration/background-information/docs/20160406/factsheet_-_the_common_european_asylum_system_en.pdf> accessed on 4 June 2019

[97] Ibid.

of first entry is in charge for the examination of the asylum application.[98] In 2003, the Dublin regulation got replaced with the Dublin II Regulation and once more in 2013 with the Dublin III Regulation, which is currently in use. With each replacement, the system got improved and adapted to current challenges. One of the biggest challenges for Dublin III remains the fair distribution of asylum applicants within the MS.[99] To determine which MS is in charge of asylum applications, the Eurodac database is used.

The Eurodac (European Asylum Dactyloscopy Database) databank is in charge of storing the finger print templates. It is the centrepiece of CEAS because border management from all MS have access to it, and they are able to quickly determine which MS is responsible for the handling of asylum applications in accordance with the Dublin Regulation.[100] For people who give their fingerprints for registration, it facilitates faster access to protection and family members will be reunited more effectively and vulnerable people can be quickly identified.[101] In order to provide and continue updating these services with the best technology, Eurodac has undergone several changes. Eurodac was adopted in 2000 by Regulation (EC) 2725/2000,[102] and, as a result of the growing migration movements towards Europe, replaced in 2013 with the Regulation (EU) 603/2013.[103] The most crucial change is that the purpose of the data bank was widened. Due to the new regulation, the European Union Agency for Law Enforcement Cooperation (Europol) and the national police forces have access to all stored fingerprints since 2015. The data from Eurodac that Europol and the domestic police forces have access to

[98] *'Country responsible for asylum application (Dublin)'* (European Commission, 2017) available at <https://ec.europa.eu/home-affairs/what-we-do/policies/asylum/examination-of-applicants_en> accessed on 4 June 2019

[99] Anja Radjenovic *'Reform of the Dublin system'* (EPRS | European Parliamentary Research Service, 2016) 2 available at <http://www.europarl.europa.eu/RegData/etudes/BRIE/2016/586639/EPRS_BRI%282016%29586639_EN.pdf> accessed on 4 June 2019

[100] *'Asylum Law of the European Union'* (Swiss Refugee Council, n.d.) available at <https://www.refugeecouncil.ch/asylum-law/legal-basis/euinternational.html> accessed on 4 June 2019

[101] *Better Protecting Refugees in the EU and Globally: UNHCRs proposals to rebuild trust through better management, partnership and solidarity* (UN High Commissioner for Refugees UNHCR 2016) 10

[102] Regulation (EC) No 2725/2000 of the European Parliament and of the Council of 11 December 2000 concerning the establishment of 'Eurodac' for the comparison of fingerprints for the effective application of the Dublin Convention [2000] OJ L316/1

[103] Regulation (EU) No 603/2013 of the European Parliament and of the Council of 26 June 2013 on the establishment of 'Eurodac' for the comparison of fingerprints for the effective application of Regulation (EU) No 604/2013 establishing the criteria and mechanisms for determining the Member State responsible for examining an application for international protection lodged in one of the Member States by a third-country national or a stateless person and on requests for the comparison with Eurodac data by Member States' law enforcement authorities and Europol for law enforcement purposes, and amending Regulation (EU) No 1077/2011 establishing a European Agency for the operational management of large-scale IT systems in the area of freedom, security and justice (recast) [2013] OJ L180/1 Recitals 1

everything that includes fingerprints, sex, date of fingerprinting and date of transmission to Eurodac,[104] place and date of asylum application from all individuals from the age of 14 and older that are part of one of the following three categories:[105]

1. Asylum applicants
2. Third-country nationals or stateless persons crossing the external border irregularly
3. Third-country nationals or stateless persons found illegally staying in a Member State

The three categories differ especially in the way of how the personal data is treated. The data of asylum applicants is stored for ten years, whereas the data of people from category two is only stored for 18 months. Lastly, the data belonging to individuals from the third category will be deleted after a comparison of the data within the system to see if there is already a registration in category one or two.[106]

2.2 Technology and Human Rights Standards at EU Outside Borders

Technologies are evolving very fast and revolutionise many areas of life. This does not differ from biometric technology. Its application in border management reshaped borders, territory, identities and privacy.[107] Technology evolution can bring long-awaited solutions for apparently unsolvable problems. This is the case now that individuals can finally be identified with physiological characteristics. As a result of the highly personal data that is preceded by biometric technology, different legal aspects have to be considered. This field of research is still young, and, most likely, there will be further legal issues discovered. A report about discrimination and AI, written on behalf of the Council of Europe (CoE), concludes that the most relevant legal tools to minimize algorithmic-discrimination are data protection and non-discrimination laws. The report mentions that there is a need for more research in the wide field of discrimination and AI. Depending on the application of the technology, there might be other

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[104] *'EURODAC (European Asylum Dactyloscopy Database)'* (European Commission, 2018) available at <https://ec.europa.eu/knowledge4policy/dataset/ds00008_en> accessed on 3 June 2019
[105] Regulation (EU) No 603/2013 art 16
[106] *'Fingerprinting migrants: Eurodac Regulation'* (European Parliament, 2015) available at <http://www.europarl.europa.eu/RegData/etudes/ATAG/2015/571346/EPRS_ATA%282015%29571346_EN.pdf> accessed on 5 June 2019
[107] Shoshana Amielle Magnet, *When Biometrics Fail: Gender, Race, and the Technology of Identity* (Duke University Press 2011) 91

sector-specific normative acts that should be applied for better management of the process.[108] With consideration to these normative acts in mind, and while this thesis uses the lens of gender to critically inspect intelligence-driven border management, laws that provide gender equality will be considered as well. Gender bias constitutes a problem in all sectors, migration, and in the development and in the use of new technologies. With this in mind, it is paramount to investigate if the practical application of biometric systems at the EU outside borders impact women due to a gender bias.

2.2.1 Non-Discrimination Law

Non-discrimination law is widely recognised as a cornerstone of international human rights law.[109] It is important in every country because it aims to ensure that every human being has equal and fair access to opportunities. Hence, non-discrimination law influences the enjoyment of all other human rights.[110] Therefore, it is not surprising that non-discrimination law is defined within several human rights instruments on different levels. With a focus on the borders outside the EU and the application of border-control algorithms, border management is conducted by the domestic border and/or coast guard from Schengen Member States in cooperation with the European Border and Coast Guard Agency (hereinafter Frontex). In consideration of EU law and of regulations being a joint initiative with border management, non-discrimination laws that do not give a contextual frame for women are not relevant for this thesis. The combination of a territorial and contextual limitation leads to a natural selection of non-discrimination laws.

European Union Level

Even though border management is conducted individually by MS, and sometimes by Frontex, it has to be aligned with EU law, even when it considers individuals from third states. The Charter of Fundamental Rights of the European Union (CFREU) regulates non-discrimination in Article 21 §1. It states that *"any discrimination based on any ground such as sex, race, colour, ethnic or social origin, genetic features, language, religion or belief, political or any*

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[108] Frederik Zuiderveen Borgesius, *Discrimination, artificial intelligence, and algorithmic decision-making* (Council of Europe 2018) 5

[109] Ryszard Cholewinski, *Borders and discrimination in the European Union* (Immigration Law Practitioners'Association 2002) 3

[110] *'Handbook on European non-discrimination law 2018 edition'* (FRA European Union Agency for Fundamental Rights, 2018) 18 available at <https://fra.europa.eu/sites/default/files/fra_uploads/fra-2018-handbook-non-discrimination-law-2018_en.pdf> accessed on 5 June 2019

other opinion, membership of a national minority, property, birth, disability, age or sexual orientation shall be prohibited."[111] The named characteristics just listed are protected, yet this list is not complete. This gives a wide scope of protection, and it does not limit the regulation to certain characteristics. "*Any discrimination*" encompasses direct and indirect discrimination. Indirect discrimination usually happens more frequently when a practice is supposed to be neutral, but, with further observation, it reveals that the practice is discriminating individuals due to a certain characteristic.[112] In addition to the prohibition of discrimination, Article 23 CFREU goes a step further and makes equal treatment towards women legally-binding under its scope.[113]

In particular, dark-skinned women in particular benefit from Article 23 and The Racial Equality Directive 2000/43/EC which defines indirect discrimination explicitly: "*Indirect discrimination shall be taken to occur where an apparently neutral provision, criterion or practice would put persons of a racial or ethnic origin at a particular disadvantage compared with other persons, unless that provision, criterion or practice is objectively justified by a legitimate aim and the means of achieving that aim are appropriate and necessary.*"[114] Even though this directive considers only racial and ethnic origin into account, it is important to note because there is a limitation on dark-skinned women who often experience discrimination on both grounds of ethnicity and gender.[115] Another limitation of the Racial Equality Directive is that it applies solely to third-country nationals regarding entry, residence and employment.[116] The directive is usually not regarded in this context by scholars, but it is a critical directive to better understand the notion of indirect discrimination. This directive is essential for the idea of discrimination conducted by "*an apparently neutral provision.*" In addition to this lack of protection for non-EU residents, the directive further declares that indirect discrimination can be "*justified by a legitimate aim.*" Despite the fact that indirect discrimination should always be unlawful because the named characteristics should be protected all of the time. This directive still leaves the opportunity to legitimize discrimination when there is a legitimate aim to justify it. In practice, this could probably lead to a wider scope of appreciation during the times of

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[111] EU Charter of Fundamental Rights: Charter of Fundamental Rights of the European Union [2000] OJ C364/1 art 21 §1
[112] Frederik Zuiderveen Borgesius, *Discrimination, artificial intelligence, and algorithmic decision-making* (Council of Europe 2018) 19
[113] EU Charter of Fundamental Rights: Charter of Fundamental Rights of the European Union [2000] OJ C364/1 art 23
[114] Directive (EC) 2000/43 of the European Parliament and of the Council of 29 June 2000 implementing the principle of equal treatment between persons irrespective of racial or ethnic origin [2000] OJ L180/22 art 2 §2(b)
[115] T*he Female Face of Migration* (Caritas Internationalis n.d.) 2-4
[116] Directive (EC) 2000/43 art 13

adjudicating on cases of indirect discrimination when the Court decides that the aim to interfere with the right was legitimate. Accordingly, it poses the question that shall be examined next in this thesis: if it is more difficult to make EU bodies or agencies accountable for the use of technology that evaluates personal data with a biased algorithm, and, therefore, might be indirectly discriminatory?

Council of Europe Level

To gain a more complete understanding of the level of accountability for the use of personal data, the first fact to note is that under the European Convention on Human Rights and Fundamental Freedoms (ECHR), a very similar definition of discrimination to CRFEU is applied. Article 14 ECHR states that *"sex, race, colour, language, religion, political or other opinion, national or social origin, association with a national minority, property, birth or other status"*[117] shall not serve as a reason of discrimination. Article 14 protects from discrimination when it falls into the scope of another protected right within the ECHR. The expansion of Article 14 was made by the CoE because of the need for standard-setting solutions to promote equality between women and men, so it serves as a legal instrument against the increase of racism, intolerance and xenophobia everywhere.[118] To combat these increases, the Convention for the Protection of Human Rights and Fundamental Freedoms added Protocol No. 12 which states *"the prohibition of discrimination became a free-standing right."*[119] Along with this, Article 1 §2 of the Protocol adds that *"no one shall be discriminated against by any public authority on any ground (. . .)"*[120] With this expansion, the limitations from Article 14 are removed, and the protection is thus wider in scope.[121] Although Protocol No. 12 is ratified only by ten countries,[122] the growing ratifications show the spirit of providing better protection from discrimination based on religion, ethnicity and the remaining inequality between women and men. In order to achieve true equality, it is significant to make indirect discrimination unlawful

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[117] Convention for the Protection of Human Rights and Fundamental Freedoms (European Convention on Human Rights, 4 November 1950) (ECHR) art 14

[118] *'Explanatory Report to the Protocol No. 12 to the Convention for the Protection of Human Rights and Fundamental Freedoms'* (Council of Europe, 2018) 14 available at <https://rm.coe.int/16800cce48> accessed on 18 June 2019

[119] *'Handbook on European non-discrimination law 2018 edition'* (FRA European Union Agency for Fundamental Rights, 2018) 28 available at <https://fra.europa.eu/sites/default/files/fra_uploads/fra-2018-handbook-non-discrimination-law-2018_en.pdf> accessed on 5 June 2019

[120] Protocol No. 12 to the convention for the protection of human rights and fundamental freedoms (adopted 4 November 2000) art 1 §2

[121] Ibid. art 14

[122] Ibid. Chart of signatures and ratifications of Treaty 177

in the context of border management, so as to prevent racially and gender bias conduct from authorities to people who are already very exposed and vulnerable at border checkpoints.

That the European Court of Human Rights (ECtHR) shows a tendency to focus on the effect of the indirect discrimination in their rulings matters because it is victim oriented. As follows, they disregard that the indirect discrimination might have been unintentional and focus on the effect the discrimination had on the subject.[123] This can prevent that indirect discrimination from occurring intentionally. However, there is no clear applicable rule for the prohibition of indirect discrimination in the context of algorithmic discrimination. Such a rule could be useful at the avoidance of algorithmic discrimination and the indirect intention of discrimination of certain groups. To create a beneficial rule to alleviate this situation, it has to be proven that an algorithm, which might seem neutral at first glance, discriminates individuals disproportionately to other individuals on the ground of a lawfully-protected characteristic. Under the current Dublin Regulation,[124] the recording of fingerprints as biometric information is mandatory for every asylum applicant from age 14. These rulings may have a chilling effect on the random use of technologies because law enforcement could be held accountable for using flawed algorithms that indirectly discriminate. Technologies and algorithms have had the reputation to be neutral for a long time, and it seemed that the mathematical formula behind it was flawless. Little by little, more knowledge about the impact of the technology is available, and, with that, the awareness of the instabilities with biometrics raises as well.

When it comes to human rights, the CJEU takes the interpretation of the ECtHR into account.[125] And so, the cases from the ECtHR can have an impact on EU case law. The interplay between the CoE standards and EU Law shall not only apply by interpreting the ECHR, but also apply to their application. It got prescribed in Article 52 §3 that the scope and interpretation of the rights and principles from the CRFEU shall be the same as laid down by the ECHR.[126] Another safeguard for better protection under EU law is Article 53 CRFEU. It asserts that the Charter shall not restrict any other fundamental right that is guaranteed by any other law or

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[123] Biao v. Denmark (Grand Chamber), Application no. 38590/10, Council of Europe: European Court of Human Rights, 24 May 2016

[124] Regulation (EU) No 604/2013 of the European Parliament and of the Council of 26 June 2013 establishing the criteria and mechanisms for determining the Member State responsible for examining an application for international protection lodged in one of the Member States by a third-country national or a stateless person (recast) [2013] OJ L180/31

[125] Damian Chalmers, Gareth Davies and Giorgio Monti, *European Union Law* (3rd edn, Cambridge University Press 2014) 262

[126] EU Charter of Fundamental Rights: Charter of Fundamental Rights of the European Union [2000] OJ C364/1 art 52 §3

agreement that the Union or MS are party of and what applies to the CoE.[127] This article guarantees that the law with the highest protection applies to EU citizens and non-citizens in all circumstances of direct and indirect discrimination – even in biometrics. With the purpose of comprehending how law regulates gender discrimination, it is necessary to discuss how each level of law from the United Nations, European Union and the Council of Europe manage discrimination at borders.

United Nations Level

The Universal Declaration of Human Rights (UDHR), adopted by the UN General Assembly on 10 December 1948, has written down in Article 1 that *"all human beings are born free and equal in dignity and rights."*[128] Also, in Article 2, the declaration gets even more precise when it states that no one shall be treated differently based on any characteristic – in which sex is included since, in the UDHR, non-discrimination has been included as a general principle of the UN human right's treaties.[129] Unfortunately, it is not a treaty, and additional legal tools are needed to protect women from discrimination based on gender as well. Most of the UN human rights treaties have incorporated non-discrimination as a general principle.

CEDAW is the one convention that exclusively focuses on the non-discrimination of women. It calls for positive obligations to prevent discrimination based on gender, and it is legally binding to all state parties that ratified the convention. Therefore, it is one of the most powerful legal tools to eliminate discrimination based on gender. CEDAW follows the three principles of substantive equality, non-discrimination and states obligation to obtain gender equality. In the scope of this thesis, CEDAW is important because it provides legally binding obligations for states on how to reach gender equality. Gender equality became further interpreted in many general comments from different treaty bodies, and these interpretations support state parties to implement measures to reach gender equality. Additionally, it illustrates what equality means in the dimension of gender. As set out in chapter one, the dimension of gender has a big influence on how women are treated in a society and what access to opportunities are given to women. Therefore, the equality of opportunity and the equality of outcome have to be considered when promoting women's rights and substantive equality.

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[127] Ibid. 53
[128] Universal Declaration of Human Rights (adopted 10 December 1948) UNGA Res 217 A(III) (UDHR) art 1
[129] Ibid. art 2

CEDAW helps to promote this equality since it is legally binding to all state parties of which every EU country is a member. The definition of discrimination in CEDAW incorporates direct and indirect discrimination that, unlike other laws or regulations, requires the states to take positive action to not only treat women equally, but also to put equity measures into place to reach substantive equality. Accordingly, the EU MS as state-parties to CEDAW are obliged to make sure that women irregularly migrating into the EU have the same access to enroll in the asylum procedure as men.

2.2.2 Data Protection Law

Data protection is important since discrimination often happens due to the characteristics that are shared about a person. The information about the sex, gender, ethnicity, religion and other characteristics has to be protected so as not to let this information lead to discrimination. This is especially difficult in the circumstances of an asylum application considering that these protected characteristics are often the reason why someone had to flee and needs international protection during that flight. In order to prevent personal data from being misused, it has to be distinguished when the data is collected, for what reason and to who has access to it. If this does not occur, it will lead to biased decisions that become direct or indirect discrimination. Therefore, protecting personal data helps to enforce more neutrality and equality of outcomes when using personal data. With the protection of data, privacy is respected and discrimination is more preventable. However, data protection of digital data is very difficult. As there are no borders online, and many stakeholders are interested in personal data, it is difficult to protect data properly. For all existing technologies, there is a traditional principle that helps safeguard the ethical and correct use of them. These traditional principles of data processing are *"(. . .) the principle of data minimisation, purpose limitation, fairness and transparency, and free, specific and informed consent (. . .)"*[130] Those basic guidelines are respected in the already existing regulations regarding data on all levels. Unfortunately, as technology is evolving quickly, protective regulations are behind, and, in many countries, there is no protection of personal data at all. A step in the right direction is that some institutions acknowledge the possible discriminatory impact of technology, and they stress the importance of data-protection regulations. One of the institutions who acknowledge this is Microsoft. Microsoft President and

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[130] *'Guidelines on the protection of individuals with regard to the processing of personal data in a world of Big Data'* (Council of Europe, 2017) 1 available at <https://rm.coe.int/16806ebe7a> accessed on 2 June 2019

Chief Legal Officer, Brad Smith, proposed a Digital Geneva Convention[131] to have a global and comprehensive approach for the use of information communication technologies and for the protection of cyber-attacks during times of peace and warfare. At this moment, it seems that the global community is not yet willing to follow Smith's lead to work together towards common global guidelines. To work globally on this topic could help for standard-setting reasons such as the treatment of personal data or the dangers of cyberattacks. Europe already is more developed than other regions of the world with a protective law framework, so Europe will therefore be the leader of these policies and technologies for use with female migration. In the scope of this thesis, the following regulations are of importance for the processing of personal data.

European Union Level

The level of data protection under EU law is not yet excellent but satisfactory. This is due to the law having issues to keep up with the swiftly evolving technology and repeatedly occurring new problems with transformative ways of using technology. As a way to help with these changes, the CFREU devotes two articles to privacy: Article 7 which seeks Respect for private and family life, and Article 8 which focuses on the Protection of personal data. For this thesis, only Article 8 will be discussed as this is the relevant law to tackle the privacy issues related to technology. Article 8 requires that collected personal data *"must be processed fairly for specified purposes and on the basis of the consent of the person concerned or some other legitimate basis laid down by law."*[132] However, in regard to the situation at the outside borders, it is not possible to receive real-informed content of people seeking international protection when individuals have to give their consent to be able to proceed with the application for asylum at the EU outside borders. Indeed, the CFREU says that *"some other legitimate basis laid down by law"* can be reason enough to collect and process data, but many human rights defenders argue that this is not the case when it comes to border and asylum seekers. Human rights defenders state that governments are trying to make a security-data trade off that does not

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[131] Joseph Guay and Lisa Rudnick *'What the Digital Geneva Convention means for the future of humanitarian action'* (UNHCR Innovation Service, 2017) available at <https://www.unhcr.org/innovation/digital-geneva-convention-mean-future-humanitarian-action/> accessed on 2 June 2019
[132] EU Charter of Fundamental Rights: Charter of Fundamental Rights of the European Union [2000] OJ C364/1 art 8

respect the principles of fairness, purpose limitation and necessity of their circumstances.[133] States should not misuse the vulnerable situation of asylum seekers to obtain their consent for so much data, when the consent itself is given only because of the urgent need of international protection.

Regarding the data collection of asylum applicants or irregular migrants, the Regulation (EU) 2018/1725 is the most important regulation because it applies for all union institutions, bodies or agencies. This EU Regulation is more detailed than Article 8 CFREU as it concerns *"the protection of natural persons with regard to the processing of personal data by the Union (…)."*[134] Thus, the scope of the regulation includes all privacy-related matters. Especially Article 6 notes this when it explains the protection of personal data in the context of the collection of that data at border checkpoints. It regulates the purpose of collecting and using personal data to protect people going through checkpoints.

"Where the processing for a purpose other than that for which the personal data have been collected is not based on the data subject's consent or on Union law which constitutes a necessary and proportionate measure in a democratic society to safeguard the objectives referred to in Article 25(1), the controller shall, in order to ascertain whether processing for another purpose is compatible with the purpose for which the personal data are initially collected, take into account (…)".[135]

The regulation is consistent with the traditional principles of data protection. Article 25 contains all restrictions, and, in §1(a), it is put down that restrictions of the measures referred to in Article 6 can be restricted due to *"the national security, public security or defence of the Member States."*[136]

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[133] Interview with Ravindra Das, 'A Discussion On The Social Implications Of Using Biometric Technology' (25 May 2019) personal, available at <http://www.blogtalkradio.com/apollobiometrics/2019/05/25/a-discussion-on-the-social-implications-of-using-biometric-technology>
[134] Regulation (EU) 2018/1725 of the European Parliament and of the Council of 23 October 2018 on the protection of natural persons with regard to the processing of personal data by the Union institutions, bodies, offices and agencies and on the free movement of such data, and repealing Regulation (EC) No 45/2001 and Decision No 1247/2002/EC (Text with EEA relevance) [2018] OJ L295/39 art 8
[135] Ibid. art 6
[136] Ibid. art 25 §1(a)

Collecting personal data in the context of border management is necessary in order to create profiles of individuals that want to cross the border. Regulation (EU) 2018/1725 Art. 76 §1 declares that profiling is lawful in border management under the conditions that it is *"(. . .) strictly necessary for operational purposes, within the mandate of the Union body, office or agency (. . .)"*[137]. In the context of border management, special categories of personal data can be necessary information. For example, when making the decision whether or not to grant refugee status to an asylum seeker based on such information, the person in question must be comparable in the Europol database which lists people who are accused of a crime. Therefore, provided that profiling is still in accordance with the fundamental right of privacy and the right of data protection, it seems reasonable to allow Frontex to examine that kind of sensitive data. Supplementary, Article 76 Regulation (EU) 2018/1725 specifies that the discrimination of a subject on the ground of personal data is prohibited.[138] This is a crucial addition because if the use of sensitive data is allowed, so, due to this limitation, the possible misuse of sensitive personal data is reduced. Also, it means that the way of processing personal data has to be considered carefully as to not breach this Article.[139] Nevertheless, since automated decision-making (ADM) is allowed in Article 24 §2(b) when it is *"is authorised by Union law, which also lays down suitable measures to safeguard the data subject's rights and freedoms and legitimate interests,"* Article 76 might be relativized. When personal data is used in a process of ADM, it might lead to indirect discrimination because some algorithms are indirectly or directly biased by those who made the algorithms.

The General Data Protection Regulation (GDPR) is the most developed data protection law in the world to this date. However, the scope does not cover EU institutions, bodies or agencies.[140] The GDPR regulates only the collection, processing and storage of personal data by corporations or between individuals. Nevertheless, it still plays an important role for the protection of data from people who migrate irregularly. It does not only prevent the collection of data by private companies, but also it prevents the selling of private data to EU bodies or agencies to use this information for profiling and risk-management. Furthermore, the GDPR provides with Article 22 very clear protection of automated decision-making (ADM) and

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[137] Regulation (EU) 2018/1725 art 76
[138] Ibid.
[139] *Preventing unlawful profiling today and in the future: a guide* (FRA European Union Agency for Fundamental Rights 2018) 15
[140] Regulation (EU) 2016/679 of the European Parliament and of the Council of 27 April 2016 on the protection of natural persons with regard to the processing of personal data and on the free movement of such data, and repealing Directive 95/46/EC (General Data Protection Regulation) [2016] OJ L119/1

profiling, which applies in the circumstance when regulations or directives take the GDPR as a standard and not only as Regulation (EU) 2018/1725.

Council of Europe Level

The notion of data protection under the Convention has a very similar standard as to under EU law. Although, the ECHR regulates only the right to respect for private and family life in Article 8. In order to meet the needs of data protection, the CoE modernised the Convention for the protection of individuals with regard to the processing of personal data. This was open for signatures on October 2018. Unfortunately, so far, no MS has ratified the treaty.[141] The CoE deals in detail with data protection in the Convention, and it provides good protective measure for individuals that should have gotten ratified by states.

United Nations Level

Privacy and data protection are very closely linked, but they are not the same. The interference with private life has to be assessed from case to case whereas data protection is triggered in every case concerning this topic. For that reason, the scope for data protection has to be wider.[142] The UDHR declared in Article 12 the right to privacy as a fundamental right.[143] Acknowledging the importance of the UDHR and of the right to privacy, the ICCPR incorporated the right to privacy, which is written down in Article 17 and is, therefore, legally binding to state parties.[144] However, the right to personal data privacy is not a declared right under the UDHR. In response to the evolved technology and new legal issues, the UN developed the *Guidelines for the Regulation of Computerized Personal Data Files* to give procedures for handling personal data. These guidelines set a very general notion about how personal data should be treated by authorities. Granting that they do show the wide scope that has to be regarded when making

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[141] Council Decision (EU) 2013/32 of 9 April 2019 authorising Member States to ratify, in the interest of the European Union, the Protocol amending the Council of Europe Convention for the Protection of Individuals with regard to Automatic Processing of Personal Data [2013] OJ L180/60 intro 5
[142] *Handbook on European data protection law* (FRA European Union Agency for Fundamental Rights 2018) 20
[143] Universal Declaration of Human Rights (adopted 10 December 1948) UNGA Res 217 A(III) (UDHR) art 12
[144] International Covenant on Civil and Political Rights (adopted 16 December 1966) 999 UNTS 171 (ICCPR) art 49

data protection regulations. Like the traditional principles mentioned above, the UN requires the principle of lawfulness and fairness when proceeding personal data as well.[145]

2.3 Biometric Systems and Discrimination

Since the creation of the Union, there is a citizen and non-citizen process to moving around within the Union. The inside process for citizens has abolished borders where Union members can move freely. The outside process is where non-EU citizens have to provide biometric data with a chance to be allowed to enter. With the use of biometric technology, the question is raised if this is a good solution for all parties? The EU wants to keep the inside safe while also providing people, especially women, the international protection they seek.[146] As previously described, it must be kept in mind that it is possible that gender bias is transferred into a machine. Ergo, it is the aim of this chapter to find out if the biometric systems that are important to the EU's outside borders are endangered of operating as gender biased?

The Eurodac Regulation leads the foundation of legal ground for using biometric systems at the broders. In order to gain more data to conduct risk-analysis, and to have a better overview on who is entering and leaving the Schengen zone, the Eurodac Recast 2016 Proposal shall be reinforced until 2020.[147] This proposal aids in the examination of how biometric technology both transforms border security as well as unintentionally provides negative bias toward women.

Biometric technology is a key element in remaking borders and transforming them into more technologically-smart borders as it is a focal point for internationally identifying people for consistent and long periods of time.[148] This technology is applied at border management on account of it is possible to read and understand it in the same way in different parts of the world.

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[145] *'Guidelines for the Regulation of Computerized Personal Data Files'* (Office of the United Nations High Commissioner for Human Rights Geneva, Switzerland, 1997) available at <https://www.refworld.org/pdfid/3ddcafaac.pdf> accessed on 5 June 2019

[146] *The Common European Asylum System (CEAS)'* (European Commission, 2016) available at <https://ec.europa.eu/home-affairs/sites/homeaffairs/files/what-we-do/policies/european-agenda-migration/background-information/docs/20160406/factsheet_-_the_common_european_asylum_system_en.pdf> accessed on 4 June 2019

[147] Regulation (EU) No 603/2013

[148] Interview with Ravindra Das, 'A Discussion On The Social Implications Of Using Biometric Technology' (25 May 2019) personal, available at <http://www.blogtalkradio.com/apollobiometrics/2019/05/25/a-discussion-on-the-social-implications-of-using-biometric-technology>

On top of this, and even more importantly, the biometric information can be read by computers, and then it can be automatically compared with other templates within seconds. To use biometric information in this way, it has to be stable, unique and universal.[149] The Directive (EU) 2016/680 defines biometrical data as *"personal data resulting from specific technical processing relating to the physical, physiological or behavioural characteristics of a natural person, which allow or confirm the unique identification of that natural person, such as facial images or dactyloscopic data."*[150] The physical features used for data collecting has to be as stable as possible to be considered valuable biometric data;[151] therefore, if the data is hacked, it cannot be undone, nor can the biometrics be changed. A person's identity remains consistent despite common technological vulnerabilities. The fact that human input is required to create biometric systems is what makes this technology controversial.[152] Unlike a password, the body parts used for biometrical identification cannot be exchanged with another person or taken to use for identity theft. These body parts are what identifies people. Exactly for this reason that the biometric systems use highly private data, it is important to closely examine if there are any data privacy breaches, or if the algorithms perform in any bias manner.

2.4 Physical Biometrics

Physical biometrics are a tool to identify or to verify an individual on behalf of unique physical attributes. Biometrical data has some uniqueness as it can be standardised which is what makes it such a valuable information tool to identify individuals. At the same time, when thinking of the instability of the nature of identities, it seems like a big challenge to stabilize the identification system in the long-term.[153] The body parts used for biometrical identification need to remain the same as long as possible to continue to correctly use biometrics for identification.[154] Some of the physical biometrics, like the voice which changes during the day

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[149] Lehte Roots, 'The New EURODAC Regulation: Fingerprints as a Source of Informal Discrimination' (2015) 5(2) Baltic Journal of European Studies 109

[150] Directive (EU) 2016/680 of the European Parliament and of the Council of 27 April 2016 on the protection of natural persons with regard to the processing of personal data by competent authorities for the purposes of the prevention, investigation, detection or prosecution of criminal offences or the execution of criminal penalties, and on the free movement of such data, and repealing Council Framework Decision 2008/977/JHA [2016] OJ L119/89

[151] Shoshana Amielle Magnet, *When Biometrics Fail: Gender, Race, and the Technology of Identity* (Duke University Press 2011) 123

[152] Ravindra Das, *Adopting Biometric Technology: Challenges and Solutions* (CRC Press 2016) 3

[153] Kelly A. Gates, *Our Biometric Future: Facial Recognition Technology and the Culture of Surveillance (Critical Cultural Communication)* (NEW YORK UNIV PR 2011) 15

[154] Shoshana Amielle Magnet, *When Biometrics Fail: Gender, Race, and the Technology of Identity* (Duke University Press 2011) 123

or depending on the mood and even by ageing, are not stable enough over time, whether a person purposely or un-intentionally alters their body, so physical biometrics can have issues with giving true identification of a person.

The most important biometrics are fingerprints, facial images, voice, vein patterns, DNA, earlobe and eye recognition of the iris and/or retina.[155] For border management, the most relevant biometrics are iris recognition, facial recognition and fingerprints. These are the top choices because they keep quite stable over time. Thereupon, they are giving away enough information to promptly compare them with a high number of other templates. As for example, a DNA test would take awhile to process to finally identify the data subject.[156] Even though iris recognition is already established in several EU MS as biometric identification, Eurodac foresees only to collect facial images and fingerprints from third-country nationals or stateless persons. Facial recognition and fingerprints are already well established as biometric identifiers in other parts of the world and this is why it is used in the EU as well. As a result, iris recognition will not be examined closer in this thesis.

Fingerprints

Using fingerprints as a verification or an identification is very widespread in the public and private sector. For example, most smartphones have a touch-ID included to verify the access to the device. Also, most countries use it for identification at borders.[157] The EU uses the Automated Fingerprint Identification System (AFIS) to collect the biometric data and ultimately store it in Eurodac.[158] To make the application as secure as possible for the data subject, Eurodac stores only a system-operator's number with the date and place of registration, and the fingerprints and sex of the person.[159]

The process for completing registration starts with a fingerprint expert taking all fingerprints by using a fingerprint machine. An optical sensor takes various pictures of each fingertip to then form a master image compiled out of these. When the fingerprint has a good quality, it will

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[155] Interview with Ravindra Das, 'A Discussion On The Social Implications Of Using Biometric Technology' (25 May 2019) personal, available at <http://www.blogtalkradio.com/apollobiometrics/2019/05/25/a-discussion-on-the-social-implications-of-using-biometric-technology>
[156] Ibid.
[157] Ibid.
[158] *'Automated Fingerprint Identification System (AFIS)'* (European Commission, 2019) available at <https://ec.europa.eu/home-affairs/content/automated-fingerprint-identification-system-afis_en> accessed on 30 June 2019
[159] Ibid.

be processed and stored in the database. To identify someone on behalf of their fingerprints, the rich characteristics of fingerprints are compared with the databank in use.[160] For the irregular migrants of which this thesis focuses on, the database used is Eurodac. On the reporting date, 31 December 2018, 5,356,102 fingerprints have been stored in this database.[161]

There is no data about how women are affected in this process due to their gender, or more specifically, if they are affected more, in any way, than men. The three issues mentioned above show that by using fingerprints as a biometric, identification holds technical and manual problems. A machine can make wrong matches. In addition, fingerprints can suffer from deficient quality which results in the prints not being as stable as they should be to ensure that no mistakes happen. These verification and identification issues with the system can lead to detention and, maybe, to deportation to the country of first entry or even the home country of a person. With these consequences in mind, Journalists from The Migrations' Files report that "*at least ten people a year are wrongly deported due to false system hits in the fingerprint ID scanning devices. The true number may be far higher."*[162] The German Federal Ministry of the Interior reported that until the 23 January 2019, a total of ten false positives have been reported for the year 2018.[163] This is a violation of fundamental rights, so it has very negative impacts on every single person that is affected by it.

The comparison of fingerprints with stored templates in Eurodac is a completely automated process. Based on the result of this process, it will be decided which country is responsible to proceed with processing the asylum seeker's application.[164] Because of the decision is made solely by this automated process, Article 24 Regulation (EU) 2018/1725 applies. Under this article, data subjects *"have the right to not be subject of a decision solely based on automated*

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[160] Interview with Ravindra Das, 'A Discussion On The Social Implications Of Using Biometric Technology' (25 May 2019) personal, available at <http://www.blogtalkradio.com/apollobiometrics/2019/05/25/a-discussion-on-the-social-implications-of-using-biometric-technology>

[161] 'Zahlen zu Speicherungen in polizeilichen EU-Datenbanken (2018) - BT-Drucksache 19/6879' (Bundesministerium des Innern, für Bau und Heimat, 2019) X available at <https://andrej-hunko.de/start/download/dokumente/1287-speicherungen-polizeiliche-eu-datenbanken-2018/file> accessed on 30 June 2019

[162] 'Software: A favorite security budget item' (The Migrants Files, 2015) available at <http://www.themigrantsfiles.com/> accessed on 30 June 2019

[163] 'Zahlen zu Speicherungen in polizeilichen EU-Datenbanken (2018) - BT-Drucksache 19/6879' (Bundesministerium des Innern, für Bau und Heimat, 2019) 4 available at <https://andrej-hunko.de/start/download/dokumente/1287-speicherungen-polizeiliche-eu-datenbanken-2018/file> accessed on 30 June 2019

[164] 'The Common European Asylum System (CEAS)' (European Commission, 2016) available at <https://ec.europa.eu/home-affairs/sites/homeaffairs/files/what-we-do/policies/european-agenda-migration/background-information/docs/20160406/factsheet_-_the_common_european_asylum_system_en.pdf> accessed on 4 June 2019

processing (. . .)" The general principle of this article is that, in case of a decision solely based on an automated decision which produces legal effects on the data subject, or, if it affects the data subject in a similar or significant way, the person in concern should be allowed to obtain human intervention. In the very least, the data subject should be able to have suitable measures that have to be installed to safeguard the data subject's rights and freedoms. Therefore, the Eurodac Regulation established in the preamble that every match of a fingerprint *"should be verified by a trained fingerprint expert in order to ensure the accurate determination of responsibility."* Not basing someone's life on a machine that is proved to be making mistakes is certainly a good decision. However, in the case of a re-evaluation of the match by a human, there is still no guarantee that the result will be more accurate. In a test with five fingerprint experts that was performed in another context, the results showed that three out of five experts make a biased decision if they have prior knowledge about the case they are working.[165] Keeping in mind that this is not a quantitative study, it still demonstrates that, even in seemingly neutral situations like this, unconscious bias can influence a person's decisions. Again, there is no data yet available about the preferences of gender when having a re-evaluation of fingerprint matches. Although, gender is the only personal data stored in addition to the fingerprint templates.[166] The European Parliament argues that, between fingerprints and gender, it cannot be reproduced who the data subject is or where the data subject comes from.[167] Evidently, it did not occur that the knowledge about the gender might have an impact on the decision, which probably lead to the discrimination of one of the genders. The question on why the information about the gender is stored in Eurodac and how it might impact women remains unresolved. Arguments that have been built previously in this thesis have proven that there is a chance of algorithmic discrimination based on gender. Thus, women are more vulnerable in this context. The data-gap contributes again to further studies that are lacking on the role of gender. Data on this issue should be collected and used to make an informed decision about whether the information should remain under the Eurodac Recast 2016 Proposal. If it remains as additional information, the usage of the gender in Eurodac should be clarified within the Regulation. It is

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[165] Gretchen Gavett *'Can Unconscious Bias Undermine Fingerprint Analysis?'* (Frontline, 2012) available at <https://www.pbs.org/wgbh/frontline/article/can-unconscious-bias-undermine-fingerprint-analysis/> accessed on 5 June 2019
[166] Regulation (EU) No 603/2013 art 14
[167] Anita Orav *'Recast Eurodac Regulation'* (EPRS | European Parliamentary Research Service, 2016) 6 available at <http://www.europarl.europa.eu/RegData/etudes/BRIE/2016/589808/EPRS_BRI%282016%29589808_EN.pdf> accessed on 5 June 2019

desirable that the Eurodac Recast 2016 Proposal is gender-sensitive and that it respects the integrity of women.

Facial Recognition

Facial recognition will soon be an important part of Eurodac, and it will affect every person that is in need of international protection. It is of utmost importance that this implication is well studied. With the revision of Regulation (EU) No. 604/2013, giving a facial image will become mandatory for asylum applicants, third-country nationals and stateless people who irregularly cross any EU border or are found illegally staying in the Schengen Zone. The facial images will be stored in the Eurodac central data bank along with the fingerprints. Also, it will become mandatory for children six-years-old and older to have their physical features processed. The collection of facial images will not yet be connected to a biometric system until 2020, so the collection serves as a *"pre-cursor to introducing facial recognition software in the future and will bring EURODAC in line with the other systems such as the Entry/Exit System."*[168] Before the final transition to facial recognition starts, the European Union Agency for the Operational Management of Large-Scale IT Systems in the Area of Freedom, Security and Justice (eu-LISA) will assess a study on facial recognition software to evaluate its accuracy and reliability.[169] This assessment, before the implementation in 2020,[170] is highly important to uncover dangers for the data subjects that can occur in the application of interoperable systems. To be successful, the assessment needs to be comprehensive. It needs a diverse team to work on this assessment with a gender-sensitive approach.

In the past few years, several big technology companies that sell their facial recognition systems to law enforcement have been portrayed negatively in the media due to the flawed performance of the systems. The company, Amazon, for example, refused to retreat a deal to sell 'Rekognition,' Amazon's facial recognition system, to the government even though it performed racially biased.[171] It is possible that a facial recognition system performs badly because of manual issues – such as bad lightning. Either way, these issues may cause further discrimination of a certain group. Such an issue could be a different lighting that alters the shape

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[168] COM(2016) 272 final 2016/0132 (COD) 5
[169] Ibid. 5
[170] Ibid. 93
[171] Zak Doffman *'Amazon Refuses To Quit Selling "Flawed" And "Racially Biased" Facial Recognition'* (Forbes, 2019) available at <https://www.forbes.com/sites/zakdoffman/2019/01/28/amazon-hits-out-at-attackers-and-claims-were-not-racist/#5701e85b46e7> accessed on 28 May 2019

of the face, different facial hair or just differences in appearance due to ageing.[172] Even though the technology measures the space between different attributes of the face and their size, ageing can change essential characteristics that can create issues with the identification software. For example, the nose never stops growing.[173] In addition to ageing, the face changes in other ways over time. Traumatic experiences can have such an enormous impact on humans that, in some cases, the face changes in such an extreme manner,[174] that it cannot be correctly identified anymore. This is especially true when it concerns women who have a very high risk of experiencing traumatic situations due to gender-based violence and the higher exposure to other threats during conflicts, the escape route and in the reception country.[175] With this in mind, the preliminary assessment from eu-LISA will hopefully take these issues into account for future technological advancements.

In addition to changes of the facial image or expression, several technical issues exist that are hidden in the system's algorithm. A bad performance can be rooted in manual issues, but it may also be in the system directly. There was a case in New Zealand where the machine rejected a picture of a man of Asian descent because the machine could not detect an open set of eyes. Therefore, the machine rejected the picture with the reasoning that the eyes were closed.[176] There have been other disturbing incidents where facial recognition systems have malfunctioned. Nikon's facial recognition cameras in 2009 had several issues with distinguishing blinking eyes when taking an image of Asians. These kinds of mistakes happen when an algorithm is not trained with a diverse data set that has not been created with anti-discrimination in mind.

Algorithms have to be trained with different sets of data that contain thousands of pictures of faces in order to learn to recognize and to classify faces. During this training process, there is a risk of introducing a bias to the algorithm if flawed datasets are used. If an algorithm is not well trained, discriminatory errors, like suggesting that dark skinned people should be marked

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[172] Interview with Ravindra Das, 'A Discussion On The Social Implications Of Using Biometric Technology' (25 May 2019) personal, available at <http://www.blogtalkradio.com/apollobiometrics/2019/05/25/a-discussion-on-the-social-implications-of-using-biometric-technology>

[173] Ibid.

[174] Kelly A. Gates, *Our Biometric Future: Facial Recognition Technology and the Culture of Surveillance (Critical Cultural Communication)* (NEW YORK UNIV PR 2011) 17

[175] Tam O'Neil, Anjali Fleury and Marta Foresti *'Women on the move - Migration, gender equality and the 2030 Agenda for Sustainable Development'* (Swiss Agency for Development and Cooperation SDC, 2016) X available at <https://www.odi.org/sites/odi.org.uk/files/resource-documents/10731.pdf> accessed on 29 May 2019

[176] James Regan *'New Zealand passport robot tells applicant of Asian descent to open eyes'* (Reuters, 2016) available at <https://www.reuters.com/article/us-newzealand-passport-error/new-zealand-passport-robot-tells-applicant-of-asian-descent-to-open-eyes-idUSKBN13W0RL> accessed on 28 May 2019

as gorillas can occur. In recent times, notably, we have seen that some facial recognition systems do not perform well with certain groups of society which creates an unfair advantage to certain groups of people who are already in the vulnerable situation of migrating.

To investigate more into this predicament, Joy Buolamwini, a computer scientist, experienced that she could not be identified by a facial recognition system due to her dark skin. With the help of a fellow computer scientist, Timnit Gebru, she conducted a comparative study to find out why the system cannot correctly identify subjects with dark skin. They found that some of the biggest and most widely used datasets by big technology companies are not very diverse with identification. In fact, some of the datasets that are used by facial recognition systems developer are composed of more than two-thirds light-skinned male sample faces during the algorithm-training process.[177] Thus, in practice, algorithms trained with these skewed datasets perform much more precisely when they are identifying light-skinned people over dark-skinned people because they have more training with these facial characteristics. The fact that the algorithm performs not as equally well with people who have different skin shades makes the algorithm racially biased and leads to indirect discrimination. The comparative study not only revealed the same/similar result of racial bias, but it also discovered a gender bias that the algorithm had developed by training with these specific types of light-skinned datasets. In total, 34.7% of dark-skinned women have been victims of a wrong positive or a wrong negative. In comparison, only 0.8% of light-skinned males have encountered a wrong positive or a wrong negative.[178] It is important to note that several dark-skinned women have not even been recognized with human faces at all. After further examining the datasets used to train the algorithm, the researchers found that females and especially females of colour, were underrepresented in the dataset training. This is a negative result of the underrepresentation of females in the technology industry. People creating these training sets are usually male, so they feed the sets with what they are used to seeing in their daily life. They do not realize that this might do not represent all the persons that are going to be affected by it.[179]

In connection with border management, the biggest threat is that these skewed datasets are used to train facial-recognition algorithms that will be applied at border management to identify asylum applicants. If more than every third dark-skinned woman gets identified incorrectly, this

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[177] Joy Buolamwini and Timnit Gebru, 'Gender Shades: Intersectional Accuracy Disparities in Commercial Gender Classification' (2018) 81 Proceedings of Machine Learning Research 77

[178] Ibid. 77

[179] Jieyu Zhao, Tianlu Wang, Mark Yatskar, Vicente Ordonez and Kai-Wei Chang *'Men Also Like Shopping: Reducing Gender Bias Amplification using Corpus-level Constraints'* (University of Virginia, n.d.) available at <http://markyatskar.com/publications/bias.pdf> accessed on 22 June 2019

poses a massive security issue, and it then leads to various violations of fundamental rights as declared by Article 21 CFREU.

Shortly after the results of Buolamwinis and Gebrus' study was published, the American Civil Liberties Union (ACLU) put Amazon's 'Rekognition' facial recognition software under a test - the same system which was never improved that is now used by law enforcement in some U.S. states.[180] The results were almost identical to those of Buolamwinis and Gebrus's study that tested systems from other companies. This test seconded that flawed training datasets can have a devastating impact on the performance of algorithms. Both studies showed that the biggest issues with system identification have been gender and racial bias. It is necessary to recall that domestic countries of female asylum applicants in Europe are from countries where the majority of females are dark-skinned. If the facial recognition process will be established by 2020, many women might be afflicted from this double-discrimination.

After ACLU published the results, Amazon defended the technology in Amazon's official AWS Machine Learning Blog. They argued that it is helpful to use in the combat against crimes such as child exploitation or trafficking in human beings.[181] This argument almost sounds like an advertisement from the EU to promote the use of facial recognition systems. Indeed, facial recognition systems can be useful in combating crimes like smuggling or trafficking of human beings. Yet, it seems that the balance between helpful and harming has not been found yet. The costs are too high when it potentially harms every third dark-skinned woman that is dependent on a functioning system to obtain access to international protection. While knowing that biometrical systems can be flawed and harm individuals, it is difficult to understand why the Union pushes for new regulations where more biometrical data can be collected and shared with more law enforcement type groups and MS across the EU. Whereas, in many parts of the world, there is a counter-trend visible in response to the proven violations of the technology. One of the most prominent examples being San Francisco banning facial recognition systems for surveillance systems because they acknowledged inter alia that the systems are biased and

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[180] Jacob Snow *'Amazons Face Recognition Falsely Matched 28 Members of Congress With Mugshots'* (American Civil Liberties Union, 2018) available at <https://www.aclu.org/blog/privacy-technology/surveillance-technologies/amazons-face-recognition-falsely-matched-28> accessed on 15 April 2019
[181] Matt Wood *'Some quick thoughts on the public discussion regarding facial recognition and Amazon Rekognition this past week'* (AWS Amazon Machine Learning Blog, 2018) available at <https://aws.amazon.com/de/blogs/machine-learning/some-quick-thoughts-on-the-public-discussion-regarding-facial-recognition-and-amazon-rekognition-this-past-week/> accessed on 18 April 2019

discriminate against certain groups of people.[182] At this point of technical development, it is not possible to completely understand on what grounds the prediction of the algorithm is made. Nevertheless, this does not mean the issue should not be explored and learned from to prevent current future technological discrimination. To gain a better understanding of the error potential of biometric systems, the following chapter is dedicated to expose issues within algorithms.

Interim Conclusion

The negative impact on women from the lack of substantive equality can be observed more clearly in the fields of migration and technology. Both migration and technology are topics overwhelmingly associated with men.[183] This factor can contribute to the explanation of the lack of data on women in migration and an underrepresentation of women in technology.

Technology is another significant example on how gender bias can impact something that is artificially produced by humans as a direct result of policies that allow gender discrimination to continue. The access to technology is limited to women in comparison to men. 200 million fewer women worldwide own a mobile phone compared to men, and the gender gap regarding access to the internet is even higher.[184] This can be explained with gender stereotypes and gender discrimination that prevent women or girls to use technologies.[185] Thus, there is a massive gender gap in technology-related occupations. This impacts how technologies are developed and influence our lives. An example of this is how technologies can reinforce gender-stereotypes. For instance, most artificial intelligence (AI) assistant devices are equipped with female voices. This reinforces the idea that a typical role of a woman is in an assistant position.[186] Furthermore, gender bias and other biases are unconsciously inwrought in

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[182] *'San Francisco Board of Supervisors Approves Historic Face Surveillance Ban and Oversight Law'* (American Civil Liberties Union, 2019) available at <https://www.aclunc.org/news/san-francisco-board-supervisors-approves-historic-face-surveillance-ban-and-oversight-law> accessed on 2 June 2019

[183] Daniel Levitt *'Women In Tech: The Opinion Of A White Male In Silicon Valley'* (Forbes, 2018) available at <https://www.forbes.com/sites/forbestechcouncil/2018/07/03/women-in-tech-the-opinion-of-a-white-male-in-silicon-valley/#466528497285> accessed on 22 June 2019

[184] *Working Group on the Digital Gender Divide Recommendations for action: bridging the gender gap in Internet and broadband access and use* (Broadband Commission for Sustainable Development 2017) 17

[185] Lindsey Nefesh-Clarke *'As technology advances, women are left behind in digital divide'* (Thomson Reuters Foundation, 2018) available at <https://www.reuters.com/article/us-britain-women-digital/as-technology-advances-women-are-left-behind-in-digital-divide-idUSKBN1K02NT> accessed on 20 June 2019

[186] *'I'd blush if I could - closing gender divides in digital skills trough education'* (UNESCO & EQUALS Skills Coalition, 2018) 97-98 available at <https://unesdoc.unesco.org/ark:/48223/pf0000367416/PDF/367416eng.pdf.multi.page=1> accessed on 29 June 2019

algorithms. Some algorithms failed at being gender-neutral and racial-neutral.[187] Studies testing these algorithms on biases proved that there are many flawed systems in use. Recently, more people working in this field, especially women, have raised their voices, and they blame the underrepresentation of women in this field for some of the discriminations. They claim that gender-stereotypes favour men in tech-related jobs, and that the underrepresentation of women harms the business because a more diverse developing team would prevent developing gender-biased algorithms.[188] Thus, several organisations have been formed to raise awareness and lobby for more women in technology companies. This will only become a bigger issue in the future because more aspects of our lives will be supported by AI assistants. The UN is aware of this issue. To counteract this raising issue, the UN Sustainable Development Goal No. 5 promotes the enhanced use of technology to empower women and to fight the issue of gender inequality.[189] This goal can help to form inspiration in young women to choose a career in a tech-related field. When more women are involved in the developing process, gender-related issues can be minimized and stereotypes can be overcome.[190]

2.5 Effect of Human Input on Algorithms

Algorithms are often compared with *black boxes* that do not show the actual data processing − only the end result. The algorithm converts the data into a presumption, and, often, it is not clear how the presumption was generated.[191] From a study conducted by Professor Frederik Zuiderveen Borgesius for the CoE, he was able to identify six possibilities of how the application of AI can lead to discrimination. These findings are presented below:[192]

Target Variable / Class Labels
To filter or target specific characteristics, the algorithm is trained with training data that is pre-labelled by the coder. The algorithm learns the attributes that correlate with the labelled training

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[187] Jieyu Zhao, Tianlu Wang, Mark Yatskar, Vicente Ordonez and Kai-Wei Chang *'Men Also Like Shopping: Reducing Gender Bias Amplification using Corpus-level Constraints'* (University of Virginia, n.d.) available at <http://markyatskar.com/publications/bias.pdf> accessed on 22 June 2019

[188] *'#TheGapTable'* (medium.com, #Angels News, 2018) available at <https://medium.com/angels-news/thegaptable-9982230d923a> accessed on 22 June 2019

[189] *'Goal 5: Achieve gender equality and empower all women and girls'* (United Nations, 2018) available at <https://www.un.org/sustainabledevelopment/gender-equality/> accessed on 29 June 2019

[190] Caroline Criado-Perez, *Invisible Women. Exposing Data Bias in a World Designed for Men* (Chatto & Windus 2019) 266

[191] Frederik Zuiderveen Borgesius, *Discrimination, artificial intelligence, and algorithmic decision-making* (Council of Europe 2018) 10

[192] Ibid. 10

data. Afterwards, the algorithm can label which data *potentially* correlates with the labelled data from the training set. This new output of the algorithm is called the *target variable*.[193] A common instance of this circumstance is how an algorithm in an email mailbox is coded to detect spam emails. Hereby, it is important to emphasise the potential that the algorithm detects only the spam. Also, in comparison to the mistakes that were made in the study on false and bias facial recognition, there are always many emails in the spam folder that are wrongly categorized as spam. The example with the spam folder proves that such a similar algorithm can make mistakes. This is a common and well-accepted mistake which is why everyone has a look now and then in the spam folder that they do not trust. These mistakes happen under the circumstance that the deep-learning algorithm did not have enough training data to have a trustful learning outcome. As deep-learning algorithms learn how to make potential new correlations that have not been foreseen by the developer, it often poses a challenge to them to understand how the algorithm calculates the target variable.

In addition to targeting only the variable, it is possible to create and to teach the algorithm additional *classes*. This can be useful on account of it is making a target more specific by excluding *classes*. Following is a very good example that shows how easily a group of people can be discriminated by an algorithm. This happens simply due to the fact that the people who coded it did not consider all aspects of human dynamics:

"The company could choose 'rarely being late often' as a class label to assess whether an employee is 'good'. But if people with an immigrant background are, on average, poorer and live further from their work, that choice of class label would put people with an immigrant background at a disadvantage, even if they outperform other employees in other aspects."[194]

Labelling Examples

The learning outcome of the algorithm can be affected by an initial training set that was already flawed or biased. In the tech-world, this phenomenon often is referred to as '*garbage in, garbage out.*' There are two ways a biased training set can have discriminatory end-results.

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[193] Ibid. 10
[194] Ibid. 11

Either the training set is already biased or the algorithm learns from a sample which is already biased.[195] Algorithmic systems are often used in the field of human resources in readiness to improve the recruiting process systems. The same systems that make the pre-selection of fitting candidates to possible jobs. Such systems would be extremely beneficial if cases have not been uncovered in which female applicants have not been preselected by the algorithms for interviews in certain positions. It was revealed that these situations occurred because the algorithm learned that women are usually not in specific positions in the company data. This data is founded from previous recruitment procedures because the humans working in the recruitment process who did the selection already had been biased towards women.[196] The algorithm reproduced merely the already-implemented bias.

The gender-dimension can play a critical role in the current and future issues in bias algorithms. As explained in Chapter one, when women are underrepresented, it is more likely the result of a lack of data about women. As in example, this can lead to an underrepresentation of female pictures in a data-set that is used to train an algorithm to recognize faces as a means of identification. Thereupon, this is exactly what caused the bias in the systems tested by Buolamwini and Gebru and as well as the 'Rekognition' tested by ACLU that caused so many conflicts for the security of women.

Data Collection

The data used to train the algorithm has to be collected first in order to teach it to the algorithm. If not carefully considered how this data is collected, and when, and by whom this data should be collected, it can easily happen that the training set is going to be biased, and this, in turn, will bias the algorithm.[197]

Feature Selection

The algorithm can be introduced to features (otherwise called categories of data). These features make it possible for the algorithm to make a selection and a prediction for the user to make the

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[195] Ibid. 11

[196] Jeffrey Dastin *'Amazon scraps secret AI recruiting tool that showed bias against women'* (Reuters, 2018) available at <https://www.reuters.com/article/us-amazon-com-jobs-automation-insight/amazon-scraps-secret-ai-recruiting-tool-that-showed-bias-against-women-idUSKCN1MK08G> accessed on 2 June 2019

[197] Frederik Zuiderveen Borgesius, *Discrimination, artificial intelligence, and algorithmic decision-making* (Council of Europe 2018) 11

outcome more targeted. If the selection of the feature is biased in the first place, the selection made by the algorithm will automatically be biased as well. Therefore, it will most likely be discriminatory to a certain group that represents a category.

Proxies

It can occur that the algorithm encodes a protected characteristic in other data that is not seen by humans. This usually occurs when a certain characteristic is highly correlated with membership of a protected class. Some examples of a protected class could be the skin colour or the sexual orientation of an individual. Solving this problem is very difficult on account of the overall end results losing accuracy as a consequence of some data being taken away to prevent proxies.[198] In practice, this could mean that, due to the learning outcomes of the algorithm, a member of a protected class could be excluded from a specific service, or, in the other way around, the individual could be targeted due to the protected characteristics installed.

When in official use, this kind of indirect discrimination is very difficult to prove. The algorithm can make findings regarding protected characteristics that are not even directly provided by law enforcement or otherwise. It is not assumed in these situations that discrimination can occur. This complicates tracing and uncovering of indirect discriminations.[199]

Intentional Discrimination

Sometimes proxies are used on purpose to discriminate or target a specific group. Using an algorithm and its prediction to discriminate or target a specific group makes it less obvious and more difficult to reveal or to prove an intentional discrimination.[200] Thus, the discrimination can be easily hidden since no one assumes that the data is available to make this *proxy*.

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[198] Ibid. 13
[199] Convention for the Protection of Human Rights and Fundamental Freedoms (European Convention on Human Rights, 4 November 1950) (ECHR) art 14
[200] Frederik Zuiderveen Borgesius, *Discrimination, artificial intelligence, and algorithmic decision-making* (Council of Europe 2018) 13

Threshold

Next to these six different ways on how the algorithm can become biased and discriminatory towards a certain group, the application of biometrics holds other technical difficulties that have to be considered when applied in practice. The accuracy of biometric systems varies within the setting that encloses the possible range of authentication and verification of identification − also known as the threshold. The threshold is adjustable. It follows that the acceptance or rejection of a match depends on if the match score falls above or below the threshold.[201] If the threshold is set low, there are more possible matches, and a false acceptance can be the result. In the opposite case of a threshold which is set too high, less matches are possible and false rejections can occur.[202] For facial recognition systems and fingerprint systems, this indicates that the accuracy of the systems can vary massively and disorder results.[203] In conclusion, law enforcement should generally use a high threshold when applying biometric systems while understanding not to set it too high either as this would lead to many false rejections. Taking this into consideration, it can be concluded that biometrical systems should not be the only tool used to base a crucial decision on such as placing and storing identity.

Consent and the Obligation to Provide Biometric Information for Eurodac

One of the biggest challenges for border management is the enforcement of individuals from one of the three categories (1. Asylum applicant, 2. Third-country nationals or stateless persons crossing the external border irregularly, 3. Third-country nationals or stateless persons found illegally staying in a Member State)[204] to give fingerprints to register them in Eurodac while respecting their fundamental rights. The importance of the aim to collect fingerprints must not interfere with someone's human dignity. Only the least invasive means can be applied to receive

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[201] *'Definitions for NTIA Privacy Multistakeholder Facial Recognition'* (National Telecommunications and Information Administration 2014)
<https://www.ntia.doc.gov/files/ntia/publications/redline_face_recognition_definitions_v3-redline.pdf> accessed on 5 June 2019

[202] Ben Virdee-Chapman *'The Secret to Better Face Recognition Accuracy: Thresholds'* (Kairos, 2018) available at <https://www.kairos.com/blog/the-secret-to-better-face-recognition-accuracy-thresholds> accessed on 27 June 2019

[203] Ravindra Das, *Adopting Biometric Technology: Challenges and Solutions* (CRC Press 2016) 4

[204] Regulation (EU) No 603/2013 art 14

someone's fingerprints.[205] Some people might not want to give their fingerprints for several reasons. This can reach from wanting to reach another destination country to be in charge of the application, already having a negative judgement, as a woman not being able to let a man proceed the fingerprinting procedure to not understanding why the fingerprints are necessary in their situation To gain someone's consent, tools like effective-information counselling or outreach actions shall be initiated.[206] A functioning Dublin System is possible only when there is no lack of registrations in Eurodac and the European Agenda for Migration stresses the importance of having a Eurodac without data-gaps.[207] However, no one shall be coerced to give their fingerprints for a complete recording of data, especially not vulnerable groups such as children, victims of human trafficking, gender-based violence or sexual violence, .[208] Knowing that all women can undergo a gender-sensitive fingerprinting procedure, and that the right to private life is available as set out in Article 7 CFREU, the European Union Agency for Fundamental Rights (FRA), there is advice to train more female staff. This will be especially fruitful considering that they have been observed that, in many teams, the staff members are only or mainly men.[209]

Another interference of a fundamental right is with the protection of personal data as laid down in Article 8 CFREU. Article 8 requires that collected personal data *"must be processed fairly for specified purposes and on the basis of the consent of the person concerned or some other legitimate basis laid down by law."*[210] However, it is not an absolute right, and the purpose limitation might be trumped by a legitimate basis laid down by law. With the Eurodac Recast 2016 Proposal, the use of the data will change its purpose as written down in Article 1 of the proposal.[211] Whether the aims under the Eurodac Recast 2016 Proposal are legitimate or not are ongoing discussed within the Council. Just in February 2019, there have been legal concerns

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[205] *The impact of the proposal for a revised Eurodac Regulation on fundamental rights Opinion of the European Union Agency for Fundamental Rights* (FRA European Union Agency for Fundamental Rights 2016) 14

[206] *Fundamental rights implications of the obligation to provide fingerprints for Eurodac* (FRA European Union Agency for Fundamental Rights 2015) 9

[207] *The impact of the proposal for a revised Eurodac Regulation on fundamental rights Opinion of the European Union Agency for Fundamental Rights* (FRA European Union Agency for Fundamental Rights 2016) 15
[208] *Fundamental rights implications of the obligation to provide fingerprints for Eurodac* (FRA European Union Agency for Fundamental Rights 2015) 9
[209] *The impact of the proposal for a revised Eurodac Regulation on fundamental rights Opinion of the European Union Agency for Fundamental Rights* (FRA European Union Agency for Fundamental Rights 2016) 15
[210] EU Charter of Fundamental Rights: Charter of Fundamental Rights of the European Union [2000] OJ C364/1 art 8
[211] COM (2016) 272 final 2016/0132 (COD) art 1

raised in relation to the use of personal data, yet this does not extend to the consent issues concerning the data already stored in Eurodac.[212]

Conclusion

The issues underlined in the above chapters show how difficult it is to apply biometric technology correctly and without interfering with fundamental rights. Contrary to popular belief, also from the European Commission, biometric technology does not reduce the risk of mistaken identities, discrimination and racial profiling, it simply shifts the issue away from humans towards AI systems.[213] AI systems do not perform better or are less biased than humans are, they merely mirror the input given by humans.[214] Figuring out how and at what point of the developing process the algorithm learned to perform in a certain way is difficult but feasible.[215] Just fixing the algorithm will not be enough though. Developers have to reflect on the developing process and need to understand that their own mindset actually impacts what they code. Therefore, when applying biometric technology, it is of utmost importance to know what the mathematical formula behind the algorithm is, with what dataset it got developed and tested and if the developing team is diverse. It could be concluded that AI systems (algorithms) simply reflect the people's biases who participated in creating it. As already explained in detail, everyone is consciously or unconsciously biased, which also applies to the group of people that develops biometric systems with AI. As stated before, technology itself and as a labour market is very "gendered" and there are predominantly light-skinned males working in this area. Due to gender and racial biases that are developed in surroundings that do not represent women and minorities well, the developers most likely do not realize that the training set they use is not representing all variety in society either. However, the bias still exists and has a big impact on the person that is being identified with the system developed and trained by these developers. This is another example of the negative impact that the underrepresentation of women in the labour market can have on women from a completely different part of the world, in this case female asylum seekers.

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[212] Council of the European Union, 'Reform of the Common European Asylum System and Resettlement' (Communication) Document ST_6600_2019_INIT 3

[213] *Smart Borders Package: Questions & Answers* (European Commission - Fact Sheet - MEMO-16-1249 2016) 3

[214] Interview with Ravindra Das, 'A Discussion On The Social Implications Of Using Biometric Technology' (25 May 2019) personal, available at <http://www.blogtalkradio.com/apollobiometrics/2019/05/25/a-discussion-on-the-social-implications-of-using-biometric-technology>

[215] Ravindra Das, *Adopting Biometric Technology: Challenges and Solutions* (CRC Press 2016) 4

It can be said, that there are some good non-discrimination laws, but it is difficult to enforce them for two reasons. Firstly, the scope of the regulations only covers protected characteristics, and sometimes not even all. Secondly, since there is still a lack of knowledge about how the algorithms make presumptions, therefore it is difficult to discover if the presumptions disproportionately discriminate on the ground of characteristics (protected or not). Hence, it is not a neutral provision when everyone has to provide biometric data to enroll in the asylum process when there is proof that women and dark-skinned people (especially dark-skinned women) are indirectly discriminated by facial recognition algorithms. As a concluding remark on this issue, the Racial Equality Directive 2000/43/EU should be applied, because an apparently neutral provision leads to indirect discrimination, which cannot '*objectively justified by a legitim aim*'[216].

On top of the difficulty to enforce non-discrimination law, the results of the systems can also have a wider impact than only on the data subject. It can reinforce pre-existing biases and beliefs in the user of it. The biased results prove that they are right in their stereotyping and conscious biases.[217] In summary, it can therefore be said that even if there are good non-discrimination laws, the algorithms used are most-likely biased and it is still unknown in what ways algorithms can perform indirect discrimination. It is a massive lack of transparency by companies and a big issue, if law governments allow the use of them for law enforcement reasons anyways. This raises further questions of the accountability. Have the writers of the algorithm a duty to not create biased algorithms? Do companies have an obligation to reveal the training set that was used and should they implement some minimal standards? Should they stop selling their facial recognition systems to law enforcement because they know how imperfect the systems are? Should the law enforcement create own systems, that fulfil standards? Who is accountable in the end? All these questions should be answered by the Council and eu-LISA before 2020 and the final adaption of the Eurodac Recast 2016 Proposal.

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[216] Directive (EC) 2000/43 of the European Parliament and of the Council of 29 June 2000 implementing the principle of equal treatment between persons irrespective of racial or ethnic origin [2000] OJ L180/22 Recitalis 18

[217] Matthew Kay, Cynthia Matuszek and Sean A. Munson '*Unequal Representation and Gender Stereotypes in Image Search Results for Occupations*' (ACM, 2015) 1 available at <https://www.csee.umbc.edu/~cmat/Pubs/KayMatuszekMunsonCHI2015GenderImageSearch.pdf> accessed on 1 June 2019

3   Future Challenges related to Biometric Data and Women's Rights

The conclusions from the previous chapters have outlined new problems regarding the collection and the use of biometric data. Unfortunately, this system, one that is supposed to create safety and security, fails at providing a fair system for identification and migration to an already disadvantaged group of people. The aim of this chapter is to use the aforementioned discoveries to investigate the purpose of Eurodac's 'securitization' of migration along with the fight against terrorism and international crime. These procedures must be addressed in order to explain what support is needed for each MS to be able to handle asylum applications. Firstly, it is necessary to discuss the new changes that shall be occurring concerning gender and migration. The CEAS is working on several new regulations proposals that will affect what biometrical data will be stored in Eurodac and for how long. Another current change is when Frontex announced in May 2019 that they started the first joint operation with Albania, a non-EU country, so they can exchange personal data from the borders.[218] The European Agenda of Migration and the European Agenda of Security are currently creating the biggest database in Europe of which Eurodac will be part of it. This change has prompted, border management to a process of change, so they are able to react to the increase of migration while combating terrorism and international crime.[219] All of these changes in policies will heavily impact the levels of discrimination and the rights of women in situations of forced migration. Notably, women shall mostly be impacted by the changes that cause migration to become more securitized, the interoperability of biometrics and how international cooperation is received and communicated for border management.

3.1 The Future of Europe's Migration Policy

This subchapter focuses on how the shift in border management correlates with irregular migration. The EU's new approach to migration leads to an improvement of the securitization of irregular migration and border management. The international relations theory describes the concept of *securitization* as the process of state actors transforming an issue, whether it is a real

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[218] *'Frontex launches first operation in Western Balkans'* (FRONTEX, 2019) available at <https://frontex.europa.eu/media-centre/news-release/frontex-launches-first-operation-in-western-balkans-znTNWM> accessed on 7 July 2019

[219] *'Risk Analysis in border management'* (European Border and Coast Guard Day EBCG, 2014) available at <https://www.youtube.com/watch?v=SS5TezXHZRs> accessed on 20 May 2019

threat or not, into a matter of 'security' in order to be able to apply extraordinary measures.[220] Many countries are undergoing securitization. One of the main triggers for this development has been the terrorist attacks on September 11, 2001 in New York City. After the attacks, the security market grew rapidly to provide better solutions for higher protective measures. Technologies for surveillance and data collection evolved faster than ever before, and this evolution made the shift towards an intelligence-and-risk management-based approach in border management possible.

The changes that have occurred with border management in the EU have been changed dramatically after the Schengen agreement was introduced. The Schengen agreement is considered to be one of the biggest achievements of the EU. It abolished internal borders of all Member States who are a part of the Schengen Treaty.[221] The abolishment of borders within the Schengen Area required a strengthening of the outside borders to keep the inside of the Schengen zone safe.[222] In order to do this, new physical borders have been built. At this moment, 9'000 km of land border and 100'000 km of virtual sea border exist and separates the Schengen MS from the non-Schengen states. This is the physical manifestation of the mentioned shift of border management towards securitization. The growing irregular migration towards Europe is the main contributor to the shift in border management towards securitization and a risk management approach.[223] In 2015 alone, a total of 1.8 million irregular border crossings have been counted at the outside borders.[224] Additionally, the terrorist attacks that took place in the past couple of years have been a further incentive to fight irregular border crossings. Agustin Diaz de Mera Consuerga, a former member of the European Parliament, confirmed that the terrorist attacks are an additional reason to pursue a more security-driven and risk management approach of border management. To illustrate the need for more control of entry and exit situations at the outside borders, he uses the example of the terrorist attack at the Berlin Christmas market in 2016. The person responsible for this was a terrorist who had used several

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[220] Thierry Balzacq, 'The Three Faces of Securitization: Political Agency, Audience and Context' (2005) 11(2) European Journal of International Relations 171
[221] European Union: Convention implementing the Schengen Agreement of 14 June 1985 between the Governments of the States of the Benelux Economic Union, the Federal Republic of Germany and the French Republic on the gradual abolition of checks at their common borders [2000] OJ L239
[222] 'Migration and Home Affairs. Border Crossing' (European Commission, 2019) available at <https://ec.europa.eu/home-affairs/what-we-do/policies/borders-and-visas/border-crossing_en> accessed on 7 July 2019
[223] 'Risk Analysis in border management' (European Border and Coast Guard Day EBCG, 2014) available at <https://www.youtube.com/watch?v=SS5TezXHZRs> accessed on 20 May 2019
[224] Europe without borders. The Schengen area (European Commission 2015) 3

identities to re-enter the EU after the initial permit expired.[225] This and other terrorist attacks that took place in Europe might have been prevented with the use of biometric databases. Biometric systems are an effective tool to fight identity fraud, and, when installed correctly, they are used to keep track of entry and exit situations. To avert that terrorists and other criminals enter as irregular migrants, the EU wants to install more safeguards.[226]

The physical securitization demonstrated in border walls, and the technical securitization with the application of biometric systems on the outside borders, brought the two areas of migration and security closer together. Collectively, they set the EU policy to *"address the parallel challenges of migration management and the fight against terrorism and organised crime."*[227] Consequently, the EU focuses on security solutions when creating new legislation. The part of securitization that affects biometrical systems targets three main areas: the CEAS, the European Agenda on Migration and the European Agenda on Security. The following paragraphs will examine how these three areas approach the application of Eurodac.

CEAS Framework and Eurodac

The CEAS framework entails five legislations, and all of them a proposal for a new version pending. However, as Eurodac is the legislation that is important for the securitization because of the biometric data, this part of the thesis will exclusively focus on the Eurodac Recast 2016 Proposal.[228] As mentioned before, the Eurodac Recast 2016 Proposal plans to collect facial images, and then they will implement facial recognition technology by 2020.[229] Another big change in this plan is the retention time of fingerprints and the use of facial images. Category one (asylum seekers) is stored for ten years. The personal data from individuals of category two (third-country nationals or stateless persons crossing the external border irregularly) shall be

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[225] Agustin Diaz de Mera Garcia Consuerga *'Smarter borders for Europe'* (European Parliament, 2017) available at <https://www.youtube.com/watch?v=J5qljEodBMM> accessed on 13 April 2019

[226] Commission, 'Stronger and Smarter Information Systems for Borders and Security' (Communication) COM(2016) 205 final 1

[227] Ibid.

[228] *'Common European Asylum System'* (European Commission, n.d.) available at <https://ec.europa.eu/home-affairs/what-we-do/policies/asylum_en> accessed on 2 July 2019

[229] Commission, 'Proposal for a regulation of the European Parliament and of the Council on the establishment of 'Eurodac' for the comparison of fingerprints for the effective application of [Regulation (EU) No 604/2013 establishing the criteria and mechanisms for determining the Member State responsible for examining an application for international protection lodged in one of the Member States by a third-country national or a stateless person] , for identifying an illegally staying third-country national or stateless person and on requests for the comparison with Eurodac data by MemberStates' law enforcement authorities and Europol for law enforcement purposes (recast)' (Communication) COM(2016) 272 final 2016/0132 (COD) 3

stored in Eurodac for ten years instead of 18 months,[230] and, for category three, (third-country nationals or stateless persons found illegally staying in a Member State) the data will be stored for ten years as well – instead of comparing only the data with the database and deleting it afterwards.[231]

The changes in data recording will be introduced to *"contribute to the fight against irregular migration by storing fingerprint data under all categories and allowing comparisons to be made with all stored data for that purpose."*[232] To support the MS recording the data, and, to make sure that no data-gaps happen, the Eurodac Recast 2016 Proposal also has guidelines for the MS on how to examine data correctly.[233] Especially for countries located at the busiest migration routes like Greece and Italy, they experienced the consequences of the reception crisis due to the off-target forecast of migration movements. They were overwhelmed with the high numbers of asylum applicants, so they were not able to chronicle the recordings accurately.[234] As a result, a new trend became visible in Eurodac statistics from 2016. Greece and Italy had a sudden and unproportionable growth of category two (third-country nationals or stateless persons crossing the external border irregularly). It turned out that these countries could not cope with the big numbers of individuals seeking international protection. This is why so many irregular migrants crossing the border were placed into the wrong category. No data is published about if it affected more women than men, yet, if border guards are not well- informed and trained, it is possible that they still assume that women are less likely to be persecuted than men. Therefore, the border guards may have put the asylum seekers into the wrong category as a result of this bias. The arbitrary categorization helped Greece and Italy insofar that people in category two can apply for asylum in another country after 18 months because the data will be deleted out of Eurodac after this period of time.[235] With the planned retention of data, the affected people of this arbitrary categorization suffer from deprived access to international

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[230] Regulation (EU) No 603/2013 of the European Parliament and of the Council of 26 June 2013 on the establishment of 'Eurodac' for the comparison of fingerprints for the effective application of Regulation (EU) No 604/2013 establishing the criteria and mechanisms for determining the Member State responsible for examining an application for international protection lodged in one of the Member States by a third-country national or a stateless person and on requests for the comparison with Eurodac data by Member States' law enforcement authorities and Europol for law enforcement purposes, and amending Regulation (EU) No 1077/2011 establishing a European Agency for the operational management of large-scale IT systems in the area of freedom, security and justice (recast) [2013] OJ L180/1 art 12

[231] Ibid. art 14

[232] COM(2016) 272 final 2016/0132 (COD) 3

[233] Ibid.

[234] Ibid.

[235] Regulation (EU) No 603/2013 art 12

protection even though it is granted in Article 18 CFREU.[236] For women, this can affect their physical and mental health. The access to health care is essential for victims of gender-based violence to prevent long term issues. The quality and amount of support women get in this situation is linked to the category they are put into. For example, individuals from category one has better access to social service providers due to their status. With the data retention, the issues can become chronic if the guidelines in the Eurodac Recast 2016 Proposal do not fulfill the purpose to have better guidance for the border guards.

The Eurodac Recast 2016 Proposal specified that facial images have the same duration of storage as fingerprints do. The implementations serves *"to counter challenges faced by some Member States to take fingerprints for the purposes of EURODAC."*[237] With Europol and law enforcement having access to facial images, they can use it for several purposes such as to compare a picture of a criminal with the images stored in Eurodac, or to support an efficient border management that will be more intelligence-driven by closing the data-gaps.[238] In case of flawed facial recognition systems, and, if the criminal is a dark-skinned women, every third match might be wrong.[239] This can lead to a criminalisation of women, and especially women with dark skin colour. Depending on the use of predictive policing algorithms and facial recognition systems, the access of data in Eurodac can lead to the algorithms in these systems creating proxies. The negative effects on human rights of women due to these flaws in algorithms have already been presented in the previous chapter. They will remain the same, yet, with Europol and domestic law enforcement using the database for fighting serious crimes, it can have a wider impact on women. This is because the personal data is going to be used in another context to not only determine the country that has to proceed the asylum application,[240] the data is automatically used in the context of security. This is a negative result as the data used many have a criminalizing effect on certain groups that have a wider presence in Eurodac. Systems with an underlying dynamic algorithm can learn that because a specific group is more present in the database, they are more likely to commit a crime in neighbourhoods where one specific group lives or where there is more of a presence of on-going crime.

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[236] EU Charter of Fundamental Rights: Charter of Fundamental Rights of the European Union [2000] OJ C364/1 art 18

[237] COM(2016) 272 final 2016/0132 (COD) 3

[238] Commission, 'Stronger and Smarter Information Systems for Borders and Security' (Communication) COM(2016) 205 final 2

[239] Joy Buolamwini and Timnit Gebru, 'Gender Shades: Intersectional Accuracy Disparities in Commercial Gender Classification' (2018) 81 Proceedings of Machine Learning Research 77

[240] Regulation (EU) No 603/2013 intro 8

The changes in the proposal show the compounding balance between preventive policing/security and human rights. Biometric data of individuals in need of international protection are now equally accessible for Europol and national police forces as criminal records of EU citizens. Human rights observers express their doubts regarding the necessity and proportionality of the extension of the access in the Eurodac Recast 2016 Proposal.[241] Article 8 CFREU, which regulates data protection, states that collected personal data *"must be processed fairly for specified purposes and on the basis of the consent of the person concerned or some other legitimate basis laid down by law."*[242] Under Article 6 of the Regulation 2018/1725 in the context of border management, it is allowed only for Europol or law enforcement to process data when the data was initially collected for another purpose, under the consent of the data subject,[243] or when EU law lays down to safeguard the national security, public security or defence of the Member States of the Union.[244] The act of Europol and law enforcement accessing the information of asylum seekers and other groups of irregular migrants for policing puts individuals in a situation where they can easily be concluded as criminals, and this might lead to discriminatory situation. It can be harmful to asylum seekers, but it still can be argued that it is proportionate to keep the Union safe in regards to Article 52 §1 CFREU.[245] This article defines the scope and principles of rights laid down in the CFREU. The processing of data for other purposes is only lawful when it does not affect the essence of the data protection. This is the prevention of serious risks for the data subject caused by technological processing and storing of data.[246] In this regard, the analysis of this issue from the United Nations High Commissioner for Refugees (UNHCR) has to be regarded as well. The UNHCR commented on the Commission's proposal that *'the proportionality, necessity and utility of this proposal for combating terrorism and other serious crimes should be examined and confirmed before it can be agreed. The necessity for proportionality of access for law enforcement authorities to*

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[241] *'An efficient and protective Eurodac'* (European Union, 2014) 4 available at <https://ec.europa.eu/home-affairs/sites/homeaffairs/files/e-library/docs/ceas-fact-sheets/ceas_factsheet_en.pdf> accessed on 5 June 2019

[242] EU Charter of Fundamental Rights: Charter of Fundamental Rights of the European Union [2000] OJ C364/1 art 8

[243] Regulation (EU) 2018/1725 of the European Parliament and of the Council of 23 October 2018 on the protection of natural persons with regard to the processing of personal data by the Union institutions, bodies, offices and agencies and on the free movement of such data, and repealing Regulation (EC) No 45/2001 and Decision No 1247/2002/EC (Text with EEA relevance) [2018] OJ L295/39 art 6

[244] Ibid. art 25 §1

[245] EU Charter of Fundamental Rights: Charter of Fundamental Rights of the European Union [2000] OJ C364/1 art 52 §1

[246] Regulation (EU) 2018/1725 art 7

fingerprint data of asylum-seekers and refugees in the EU is not fully demonstrated.'[247] Furthermore, the UNHCR is questioning the actual benefit for Eurodac, *'(. . .) given the mismatches and errors that can occur between imperfect traces of fingerprints and fingerprints in "Eurodac.'*[248] The European Data Protection Supervisor (EDPS) is mandated to monitor independently, so that all EU institutions and bodies apply data protection law correctly,[249]and it is used to raise doubts and share them in an official EDPS Opinion about the access of law enforcement to Eurodac. The EDPS notes that the necessity and proportionality that legitimizes an intrusion in data privacy, which is protected under Article 8 CFREU, for public security is not given. The EU has put the fight against terrorism, international crime and illegal migration as such a high priority that it sees the interference with the right to data privacy as proportionate. Unfortunately, this is not the case since the interference is not balanced due to the very harmful impact flawed systems can have on an irregular migrant's life. This would mean that Article 52 §1 CFREU applies in this situation because the essence of the rights and freedoms of Article 8 CFREU are not protected anymore. The people are already persecuted, vulnerable and in need, and the data can have too much impact to keep up with maintaining their protection. Concluding, their personal data should not be used for another reason than what was initially collected and intended.

The European Agenda on Migration, the European Agenda on Security and Biometric Data

The agenda on security and migration aims to implement new standards that allow closer cooperation between the two sectors of migration and security. The objective is to close data-gaps as well as security-gaps. Law enforcement, border management and migration control shall be dynamically interconnected.[250] The two agendas are examining on *"how existing and future information systems could enhance both external border management and internal security in the EU."*[251]

One example of the new migration and security policy that aims to close data-gaps between different large-scale IT systems is the Entry/Exit System (EES). The EES is part of the revisions

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[247] *'An efficient and protective Eurodac'* (European Union, 2014) 4 available at <https://ec.europa.eu/home-affairs/sites/homeaffairs/files/e-library/docs/ceas-fact-sheets/ceas_factsheet_en.pdf> accessed on 5 June 2019
[248] Ibid.
[249] *European Data Protection Supervisor - Annual Report 2018* (Publications Office of the European Union 2019) 7
[250] Commission, 'Stronger and Smarter Information Systems for Borders and Security' (Communication) COM(2016) 205 final 1
[251] Ibid.

of the Smart Border Package (SBP). The package has been announced in both the European Agenda on Migration and the European Agenda on Security.[252] The fact that the SBM was published under both agendas shows how both areas are moving closer together. In an official publication, the European Commission states that the SBP is not a direct reaction to the increased refugee flows since 2015. Although, the increased numbers of people migrating *'contributes to an overall strengthening'* of border management.[253] This is just another statement that shows how the EU sees irregular migration as one of the biggest security threats to the Union. The EU spends a considerable amount of funds on the SBP to combat international crime, irregular migration and identity fraud. The budget for the implementation from 2017-2023 amounts over 500 million euro.[254]

The role of women in the new security approach

The adapted migration policy was created based on a bias stemming from the perception of migration as a male phenomenon. Today, we know that women participate in migration flows equally, and that their way of experiencing the migration is different. Also, we know that the ways of how women migrate are changing right now, and that more women reach Europe as asylum seekers travelling alone than in previous decades. Yet, the European Agenda on Migration and the Agenda on Security do not provide a gender-sensitive approach to help women. A study on how the European Agenda on Migration talks about migrant women concludes that the migration policy is even de-gendering the female dimension of migration, and it does not mention women anymore as a vulnerable group.[255] There are other indications present that show that the broader migration strategy is not going to pay attention to irregular migrating women. In an official Communication on the European Agenda on Migration, it got acknowledged that certain types of migration flows receive more attention due to stereotypes, and, thus, they are overlooking other groups that also need attention. They acknowledge that migration is a very complex phenomenon which needs a comprehensive approach to include the needs of all migrating groups.[256] Nevertheless, the Commission does not include research

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[252] *Smart Borders Package: Questions & Answers* (European Commission - Fact Sheet - MEMO-16-1249 2016) 3
[253] Ibid.
[254] *Technical Study on Smart Borders* (European Commission, PwC DR-01-14-990-EN-N 2014) 84
[255] Paola Degani and Cristina Ghanem, *How Does the European Union Talk about Migrant Women and Religion? A Critical Discourse Analysis of the Agenda on Migration of the European Union and the Case Study of Nigerian Women* (Religions 2019) 15
[256] Commission, 'A European Agenda on Migration' (Communication) COM(2015) 240 final 2

on gender issues or collecting data in the action plan to actually assess what kind of attention would be needed. Research on how women are affected by interoperable systems are essential. As proved in this thesis, biometric systems can harm women and now it is necessary to investigate to find out how interoperability affects women's rights.

In spite of not having a gender-sensitive approach, the European Agenda on Migration identifies human trafficking as primarily an issue concerning women.[257] Yet, it does not focus on the security of the victims, but it rather focuses on targeting the traffickers.[258] The European Agenda on Security has de-gendered this issue completely. A word search could not find the words *woman*, *women*, *females* or *gender* once. As a result of not being present in the European Agenda on Security, irregular migrating women do not receive a lot of attention in further investigations that are based on the Agenda. Therefore, women are not visible in the other published proposals under the CEAS framework. None of the proposals show a significant change in gender-sensitivity in migration when compared to the legislation currently practiced in force. Missing data on gender in migration already shaped the legal framework in the past. Before implementing a new migration strategy, more data on women in migration should be collected to subsequently tailor it to the needs of women. The consequences of the data-lack on gender related issues has already been proven to be negative for women.

3.2 The Future of Eurodac in the Context of Interoperable Large-Scale IT Systems

The plan of the European Agenda on Migration and the European Agenda on Security foresees to close data-gaps and to make systems interoperable. With the increased data-exchange, they hope to combat issues that both agendas have in common such as irregular migration management and the fight against terrorism and organised crime.[259] The idea is that the more data that is exchanged, the better law enforcement operates. To close data-gaps, new data systems like the Entry/Exit System have already been implemented. The next step is making the systems interoperable. Interoperability refers to the ability of different systems to communicate with each other in an automatic way. This means that data is automatically

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[257] Ibid. 9

[258] Paola Degani and Cristina Ghanem, *How Does the European Union Talk about Migrant Women and Religion? A Critical Discourse Analysis of the Agenda on Migration of the European Union and the Case Study of Nigerian Women* (Religions 2019) 15

[259] Commission, 'Stronger and Smarter Information Systems for Borders and Security' (Communication) COM(2016) 205 final 1

exchanged and categorized. The main aim of interoperability is to have fast and easy access to a large amount of data while maximising the use of it.[260]

The first steps towards the interoperability of systems have taken place in 2013 when the Regulation (EU) 603/2013 was introduced.[261] The regulation did not allow Eurodac to interoperate with systems that Europol is using, but it did allow access to Eurodac. Just very recently, in May 2019, the European Parliament voted in favour of the Common Identity Repository (CIR). This planned interoperable large-scale database will be the focus of this subchapter. In 2017, the FRA issued a detailed report on fundamental rights and the interoperability of EU information systems with a focus on borders and security. It identifies several issues regarding irregular migrants such as possible interference with data privacy (Article 8 CFREU) and the right to asylum (Article 18 CFREU) which is relevant for women irregularly migrating as well.[262] The most important conclusions in the report have been that interoperability of systems must take data protection into account to protect from unauthorized access and that high standards need to be set to ensure qualitative good fingerprinting that no false matches happen.[263] In the scope of this thesis, it is not possible to make further conclusions that are not yet covered by the FRA report. However, the FRA report does not cover gender-specific issues caused by the application of biometric systems that are interoperable. The following chapter will explain what interoperability means for Eurodac and biometric data. With the knowledge that the storage of facial images and the retention of these along with fingerprints are the biggest issues for women's security, conclusions will be made about what further impact the practical use of CIR has on women.

Common Identity Repository and Eurodac

The decision by the European Parliament to create interoperability between large-scale databases and the Regulation (EU) 2019/817[264] was a milestone in the migration and security

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[260] *Fundamental rights and the interoperability of EU information systems: borders and security* (FRA European Union Agency for Fundamental Rights 2017) 7

[261] Regulation (EU) No 603/2013

[262] *Fundamental rights and the interoperability of EU information systems: borders and security* (FRA European Union Agency for Fundamental Rights 2017) 32

[263] Ibid. 28

[264] Regulation (EU) 2019/817 of the European Parliament and of the Council of 20 May 2019 on establishing a framework for interoperability between EU information systems in the field of borders and visa and amending Regulations (EC) No 767/2008, (EU) 2016/399, (EU) 2017/2226, (EU) 2018/1240, (EU) 2018/1726 and (EU) 2018/1861 of the European Parliament and of the Council and Council Decisions 2004/512/EC and 2008/633/JHA [2019] OJ L135/27

strategy because it showed that the MS are willing to interfere with privacy rights by sharing personal data to fight terrorism and international crime. Since 2013, many rules concerning the proceedings and storage of personal data have been changed to meet the requirements to be connected in an interoperable system.[265] The Regulation (EU) 2019/817 establishes an interoperability between the following five databases: Entry/Exit System (EES), Visa Information System (VIS), European Travel Information and Authorisation System (ETIAS), Eurodac, Schengen Information System (SIS), European Criminal Records Information System for third-country nationals (ECRIS-TCN).[266] Together, they build the Common Identity Repository (CIR). The personal data in CIR will be available to all border authorities, law enforcement, Europol and Interpol.[267] It will have records of over 350 million people. This makes it the third largest database of personal data in the world. The only databases that outnumber this one are the Chinese government and the India's Aadhar database.[268]

How exactly the CIR will affect women is not clear yet. At this moment, no studies exist that try to identify indirect discrimination due to gender-biased algorithms that root from CIR or any interoperable biometric system. According to the previous conclusion that facial recognition systems are likely to be gender or racial biased, and the tightened security approach on irregular migration,[269] it can be assumed that interferences with human rights of women will be similar to the ones predicted to occur with the Eurodac Recap 2016 Proposal. This is in a direct response to the widening of access to the database. Now Interpol will have access to it as well.[270] The referred issues stem from wrong matches in facial recognition systems or fingerprints and issues related with the longer storage time of personal data from individuals in Eurodac's category two and three. If and how the interoperability will have further impact is difficult or nearly impossible to predict without the advanced technological knowledge that is

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[265] 'EURODAC (European Asylum Dactyloscopy Database)' (European Commission, 2018) available at <https://ec.europa.eu/knowledge4policy/dataset/ds00008_en> accessed on 3 June 2019

[266] Regulation (EU) 2019/817

[267] Commission, 'Amended proposal for a regulation of the European Parliament and of the Council on establishing a framework for interoperability between EU information systems (borders and visa) and amending Council Decision 2004/512/EC, Regulation (EC) No 767/2008, Council Decision 2008/633/JHA, Regulation (EU) 2016/399, Regulation (EU) 2017/2226, Regulation (EU) 2018/XX [the ETIAS Regulation], Regulation (EU) 2018/XX [the Regulation on SIS in the field of border checks] and Regulation (EU) 2018/XX [the eu-LISA Regulation]' (Communication) COM(2018) 478 final 2017/0351 (COD) 6

[268] Catalin Cimpanu 'EU votes to create gigantic biometrics database' (zdnet, 2019) available at <https://www.zdnet.com/article/eu-votes-to-create-gigantic-biometrics-database/> accessed on 4 June 2019

[269] 'A Common European Asylum System' (European Commission, n.d.) 8 available at <https://ec.europa.eu/home-affairs/sites/homeaffairs/files/e-library/docs/ceas-fact-sheets/ceas_factsheet_en.pdf> accessed on 4 June 2019

[270] COM(2018) 478 final 2017/0351 (COD) 5

needed to understand the functioning of it – which would go beyond the scope of this thesis. However, even though the knowledge to understand how this technique could impact the algorithm is missing, the knowledge about how end users like Interpol are going to use the CIR does exists. As CIR was created to maximise the use of collected data in order to conduct an intelligence-driven border management, it is very likely that the personal data will be used to conduct profiling.[271] Profiling is a way of categorizing individuals on specific characteristics, and it is becoming more common to be digitized. When conducted by a system with an underlying algorithm, there are six possibilities of how the application of algorithms can lead to discrimination. It was proven Chapter 2 that women are being discriminated by flawed algorithms. With CIR, this will continue, yet, with a much bigger outreach, more institutions will have access to the personal data. In addition, it is possible that this is going to have a growing impact on already existing biases towards women.

Discrimination within technology and Automated Decision-Making
The different ways of how an algorithm can be discriminative show that the coding and application of it has to be done with caution. The different technological ways that can lead to discrimination puts emphasis on how technology can only predict, and that there is always the probability of a prediction being false. As learned, even when the algorithm is used solely to help in the decision-making process, humans often assume that the algorithm is right, so they follow what the machine proposes (also known as *automation bias*).

To make work flow more efficient, modern border management is increasingly applying data-supported decision making. By providing the system a vast amount of data, it can make a presumption be evaluating the data. When considering that most algorithms are in some way biased, the use of automated decision-making (ADM) is very concerning in the context of border management. Particularly, it is concerning for women and other vulnerable groups who can be negatively affected by automated decision-making subsequently from the aforementioned discriminatory-algorithmic practices. Bias in algorithms can influence the automated decision-making, and it can lead to discrimination of individuals.[272] Issues of

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[271] Commission, 'Amended proposal for a regulation of the European Parliament and of the Council on establishing a framework for interoperability between EU information systems (borders and visa) and amending Council Decision 2004/512/EC, Regulation (EC) No 767/2008, Council Decision 2008/633/JHA, Regulation (EU) 2016/399, Regulation (EU) 2017/2226, Regulation (EU) 2018/XX [the ETIAS Regulation], Regulation (EU) 2018/XX [the Regulation on SIS in the field of border checks] and Regulation (EU) 2018/XX [the eu-LISA Regulation]' (Communication) COM(2018) 478 final 2017/0351 (COD) 6

[272] *'Guidelines on the protection of individuals with regard to the processing of personal data in a world of Big Data'* (Council of Europe, 2017) X available at <https://rm.coe.int/16806ebe7a> accessed on 2 June 2019

algorithmic-discrimination have only been recently addressed because this possible negative impact of big-data related technologies, which ADM is, was only recently acknowledged by public authorities and international organizations [273] Thus, this issue was recognized in the General Data Protection Regulation (GDPR) in May 2018.

Under Art. 22 §1, GDPR, profiling is accepted only under the conditions that the decision cannot solely be based on ADM, nor shall it affect the data subject in a significant way.[274] Even though Art. 22 §2 allows profiling under very specific circumstances, Art. 22 §3 sets this restriction to process special categories of personal data by referring to Art. 9 §1 GDPR which regulates the *Processing of special categories of personal data.*[275] These include extremely sensitive pieces of personal genetic and biometric data as they are highly unique and can have a high stability.[276]

3.3 International Cooperation with Third Countries

In the context of migration, the EU has two main reasons to cooperate with third countries. Firstly, to have a smoother process for returning illegally staying people to their country of origin, and, secondly, to combat irregular migration. Concerning the combat of irregular migration, the EU plans to increase cooperation with third countries that are hot-spots for transit routes towards the EU. These cooperation aims to filter out (potential) criminals further away from the border. This strategy is also known as *border outsourcing.* At the moment, cooperation with third countries is mainly conducted by Frontex and Europol. To have a successful cooperation with third countries, and to identify individuals that pose a threat to the EU, there is always a need to exchange data. In turn, such data exchanges threaten human rights, and it seems to be especially dangerous for women because of potentially gender-biased facial recognition systems.

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[273] Ibid.

[274] Regulation (EU) 2016/679 art 22

[275] Ibid. art 9

[276] *'Genetische Daten'* (Deutsches Referenzzentrum für Ethik in den Biowissenschaften [DRZE], 2019) available at <http://www.drze.de/im-blickpunkt/praediktive-genetische-testverfahren/module/genetische-daten> accessed on 6 April 2019

Frontex

To coordinate the border management between all MS, the EU implemented a common border and coast-guard agency called Frontex. The main mandate of the agency is to monitor the outside borders while working closely with MS to identify security threats and to forecast migration movements.[277] Frontex is a supranational security that was established with the Council Regulation (EC) 2007/2004 in 2004,[278] and it was renovated in 2016 with the Regulation (EU) 2016/1624.[279] Migration movements are generally very difficult to forecast because there are many different factors that interplay.[280] An example for such unpredicted events that had an immense influence on migration are the events that took place in Tunisia in December 2010. A man burned himself alive in protest against the regime. This was a catalyst for the Tunisian revolution. In the following days of this event, hundreds of people from Tunisia claimed asylum in Europe.[281] This is a demonstration of how unpredictable situations can have a strong influence on irregular migration flows. The EU made wrong assumptions on migration forecasts, and now Europe faces a reception-crisis.[282] To make better predictions, and to be able to react faster to situations like this, Frontex operates with intelligence-driven methods.[283] In addition, Frontex announced the first joint operation with a third country, Albania, in May 2019. To be on the spot at a busy migration road helps to the extent that an improved border management can already be installed to filter who can pass and who cannot. It is moving the border further away from the physical border which is also known as *border outsourcing*. For irregular migrants, this means that they already have their identity checked in a third country. Although, the issues stay the same: fingerprints can be falsely identified and facial recognition systems can have issues to identify people correctly – especially dark-skinned women. Another issue is that it is further away from the EU border, and if someone is denied to pass through

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[277] *'Strengthening the EUs external borders'* (European Council, n.d.) available at
<https://www.consilium.europa.eu/en/policies/strengthening-external-borders/> accessed on 26 May 2019
[278] Council Regulation (EC) No 2007/2004 of 26 October 2004 establishing a European Agency for the Management of Operational Cooperation at the External Borders of the Member States of the European Union
[279] Regulation (EU) 2016/1624 of the European Parliament and of the Council of 14 September 2016 on the European Border and Coast Guard and amending Regulation (EU) 2016/399 of the European Parliament and of the Council and repealing Regulation (EC) No 863/2007 of the European Parliament and of the Council, Council Regulation (EC) No 2007/2004 and Council Decision 2005/267/EC
[280] *'Migration and Home Affairs. Border Crossing'* (European Commission, 2019) available at
<https://ec.europa.eu/home-affairs/what-we-do/policies/borders-and-visas/border-crossing_en> accessed on 7 July 2019
[281] *'Risk Analysis in border management'* (European Border and Coast Guard Day EBCG, 2014) available at
<https://www.youtube.com/watch?v=SS5TezXHZRs> accessed on 20 May 2019
[282] Ibid.
[283] Ibid.

Albania, it will not be possible for them to apply for asylum in the Dublin Zone. This seems like the EU is starting to make push-backs in other countries. However, this would be in violation to the right to asylum from Article 18 CFREU. To prevent these push-backs and the unlawful processing of biometrical data, the first joint mission of Frontex with a non-EU Member State should be closely observed by the EU and independent human rights organisations and the UNHCR Liaison Office to Frontex.

Europol

An issue related to the personal data stored in Eurodac is the access of Europol and their expanded mandate. In June 2018, the Council approved an anti-terrorism package which allows Europol to cooperate and exchange personal data with competent authorities of eight third-world countries. The countries are Algeria, Egypt, Israel, Jordan, Lebanon, Morocco, Tunisia and Turkey.[284] These are transit countries, yet they are also countries of origin for many irregular migrants. It is reasonable that Europol conducts cooperation with these countries for security reasons. Part of cooperating is sharing information.[285] The idea that personal data from over 350 Million individuals will soon be available for Europol, and that their data will be shared with countries that are well known for human rights violations conducted by the government and law enforcement should fill people with anxiety. Even if the sharing of personal data is only in very few situations possible, there is still a remaining possibility that the algorithm might make a mistake which can have major consequences if the country of origin has knowledge about an individual and where this person is escaping to.[286] Some human rights defenders say that the cooperation with these countries are no more than the outsourcing of borders and a conduct of push-backs as an attempt by the EU to escape the jurisdiction of the ECtHR.[287]

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[284] *'Security Union: Strengthening Europols cooperation with third countries to fight terrorism and serious organised crime'* (European Commission, n.d.) available at <https://ec.europa.eu/home-affairs/news/security-union-strengthening-europols-cooperation-third-countries-fight-terrorism-and-serious_en> accessed on 5 May 2019

[285] Ibid.

[286] Ibid.

[287] *'Warnings over proposed new Europol partners in Middle East and North Africa'* (Statewatch, 2018) available at <https://www.statewatch.org/news/2018/may/eu-europol-mena-agreements.htm> accessed on 13 June 2019

Conclusion

After new threats to the EU have been identified, the borders got reconceptualized. Part of it is the application of more technical systems to have as much data as possible about every person entering and leaving the EU. With the use of biometric systems, it is even possible to identify individuals that are qualified as possibly dangerous at an earlier stage. Moreover, they can even be stopped further away from EU borders by cooperating with third-world countries and exchanging data with them. Biometric technology makes it possible to move borders and outsource them. However, biometrics do not solve the issue. Instead, they merely help to 'technologize' it, yet the roots of the issue remain in society.[288]

The tendency for migration to become more securitized and not to include needs of women in the policies leads to more vulnerability. Without assessing the needs of women and why they are migrating, the legal framework cannot be adapted in their favour to protect them. Many reasons why women are forced to migrate are not covered by the Geneva Convention. Hence, women do not fit in the category of refugees, so they obtain less protection as they would with the refugee status.

We are witnessing drastic changes in data privacy in order to have the securitization of migration. When biased facial recognition systems are used, it is not unlikely that many wrong matches will be made when applying it to women. This could even lead to structural discrimination while reinforcing already establish gender biases.

In addition to how law enforcement collects data and makes sure that the applied machines are not biased, it is also very important to know how to store the data and who has access to it.

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[288] Shoshana Amielle Magnet, *When Biometrics Fail: Gender, Race, and the Technology of Identity* (Duke University Press 2011) 125

Conclusion

The purpose of this thesis is to provide a contemporary and coherent illustration of the impact of biometric systems at the EU outside borders on the human rights of women. Before answering the research questions, it is crucial to note how women have been influenced by the prescribed gender role from society. Only after this, can it be made clear that the research assessed two of the biggest and most urgent global challenges – irregular migration and the application of new technologies. While reviewing the primary and secondary data collected, it has become clear that this exceptionally complex and multi-layered topic needs women as a starting point to extract the essential factors that contribute to the discrimination in technology that has implications to the migration process.

Chapter one is dedicated to this very foundational question, yet the expected role of women is not yet lifted from bias people who are in positions of power. The research confirmed that the role of women obtain in societies is still governed primarily by stereotypes and gender biases. These stereotypes have been heavily embedded in fields like migration and technology that have commonly been associated with men due to research in these fields being mostly conducted by or focused about males. Shortcomings for women in migration are the lack of visibility in the legal framework. This can only be changed if more gender sensitive data will be collected on migrating women. In the area of technology, women are being more excluded from access to technology, are less present in professions that are directly related to technology and women can be targeted more often by algorithmic discrimination. Visibility, representation in numbers and gender biases are three very closely interlinked issues that have prevented full and fair studies and migration experiences for women at the EU outside borders.

Chapter two looks more critically at fingerprints and facial recognition systems since they are the main biometrics used to collect identification information from migrating women and they have both been proven to have bias standards embedded in them. With the current state of research, it is demonstrated that algorithms can and do develop a bias either from the data given to the algorithm or by the coders themselves. The collecting of data and the training of the algorithm with this collected data are the two stages of the developing process with the biggest impact on the algorithm regarding biometric systems. The algorithm is only as good as the data, and the quality of that data is only as good as the data collector. Whether the bias presented in the biometric algorithms are direct or indirect, the circumstance can be attributed to the connection between visibility, representation and gender biases from society. It is

important to emphasise that bias does occur because women are often poorly represented in datasets, and, therefore, the algorithm does not have the possibility to train the matching of female faces to assure fair representation. This confirms how essential it is to involve women in all occupations and positions in order to provide more diversity, which will be reflected in technologies, such as facial recognition systems. The findings that the human bias is being transferred via data ascertains that the biometrics being used are one of the most devastating sources of discrimination for women in migration. Furthermore, these results provide an answer to the research question, *what are the main factors that make biometric systems gender biased?*

The practical application of facial recognition systems and fingerprints at the EU outside borders, which is regulated in the Eurodac Regulation and the Eurodac Recast 2016 Proposal, does not protect from algorithmic discrimination. Although the legal framework in the EU regarding the processing of personal data is well-developed, the EU sets several limitations to data-protection in order to process personal data from irregular migrants. This is seen as purposeful enhancement of Eurodac in 2015 to provide access to Europol. A main takeaway of the legal analysis is that the proportionality of the processing of personal data is not given, yet, the EU declares the interference with the fundamental right of data privacy as proportional for security reasons. This is especially concerning since migrating women are vulnerable to the biases of algorithms in facial recognition systems.

Further findings from this chapter pertain to how biometric systems can be flawed because of the difficulties in the manual use of the information collection process. One problem with the application that occurs only for women in this process is that body contact with the fingerprint expert is needed to process the recording of the fingers. In order to respect the privacy of women, border management has to make sure that sufficient female staff is available to conduct this process, so they are able to enroll in the asylum procedure. This is but one minor example that illustrates the many ways women are differently affected from the same and, apparently, neutral provisions than men experience.

The practical problems in the application of biometric systems related to women occur on several levels when women can be affected by the manual use of biometric systems in a way men are not affected. The problems that start on the development level of the algorithm can occur directly when the facial recognition is conducted. It can cause an immediate wrong match of people to animals or not be recognized at all, or they may match incorrectly due to the standards placed in the algorithm. However, the same issue in recognition errors may occur much later; for example, can when Europol uses Eurodac to seek a criminal who is wrongly

matched with a migrant in the database. Either way, this is indirect discrimination, and it places women in situations where their privacy and identity are not respected fairly. For this reason, the Eurodac Recast 2016 Proposal must have a very clear application of rules for biometric systems. This revisit of the Proposal is examined closer in chapter three.

In chapter three, the results from the previous analysis on how facial recognition systems function are put into context with how women might be affected by the trends in the EU migration and security policy. The different strategies that lead to a further securitization of irregular migration are leading towards an extended collection of personal data and interoperability of databases. A careful examination and comparison of the current CEAS framework with the new proposals, the examination of the European Agenda on Migration and the European Agenda on Security led to the conclusion that securitization has a visible is 'de-gendering' migration. This is problematic insofar as women are less likely to be recognised as more vulnerable than men. In other words, the laws and technology that concerns women at the borders will not take into account the direct correlation of gender with gender-based violence.

Other developments are that more personal data will be processed, stored for a longer time, Eurodac will be incorporated into CIR and additional law enforcement groups and Interpol will have access to the data. After evaluating the combined information from chapters one and two, there are some obvious conditions that are disproportionately at odds with one another. Thereby, it can be concluded that the securitization of the EU outside borders impact the application of biometric systems that are used for the recording of irregular migrants in a drastic way. Not only will the purpose of Eurodac change, but also the consent of the data subject does not apply anymore. Moreover, biometric systems will not only serve to support examining which country has to enroll in the asylum procedure, but also the data in biometric systems will be strategically used to combat irregular migration and crime. This leads to a natural criminalization of irregular migrants. The most concerning part is to see the latest developments in increasing international cooperation with third countries that are well known to violate human rights to better regulate irregular migration movements. This does not have to be exclusively bad as the situation can prevent very dangerous journey towards Europe. Although, it means that personal data can be shared under certain circumstances with third countries, and this can bring refugees in great danger as well.

The development of collecting more personal data of irregular migrants and women not receiving special attention in this process, could lead to a non-diligent use of the data. With the findings from chapter two, the development of facial recognition and data that is used for

combatting crime can generate a gender bias. This combination can lead to indirect gender discrimination being built into the systems. gender. This could increase the already existing gender inequality.

The findings and the developments lead to several human rights concerns regarding women. The most concerning one being that women might not have access to the asylum procedure because the algorithm could make a wrong match and identify a woman incorrectly. Hence, another concern is that women are being indirectly discriminated since the algorithms are not trained to detect women with a high accuracy. This harms the chances of asylum for women and for policing strategies of law enforcement when using Eurodac to combat crime. If facial recognition systems or profiling systems of law enforcement target women due to algorithmic proxies, gender stereotypes could be re-enforced, which ultimately could lead to further discrimination of irregular migrating women.

When taking everything into account, it can be said that these concerns that cause implication to the biometric systems at the EU outside borders poses a risk for the human rights of irregular migrating women. It seems that the balance between helpful and harming has not yet been found. However, the repercussions of potential harm for women that are dependent on a functioning system to obtain access to international protection will only increase gender blindness and keep algorithm creators from being responsible.

Outlook

In order to combat the negative impacts that biometric systems – especially facial recognition systems – can have and the current developments in the European migration politics, swift actions are desperately needed to progress beyond the aforementioned issues. It can be assumed that by 2020, facial recognition systems will be established in Eurodac as well, and that the interoperable system CIR will be ready to take it into use soon. If the assessment of eu-LISA for the application of CIR will be similarly gender blind, then the European Agenda on Migration and the European Agenda on Security must recognise that irregular migrants will be at a high risk for algorithmic discrimination. Regarding the vulnerable situation of irregular migrating women, there should be a moratorium on using facial recognition systems for Eurodac until clear standards for vulnerable groups are set for the data quality, threshold and other technical and non-technical necessities. Moreover, to provide transparency, only algorithms that are open-source should be applied. This might seem a bit extreme, yet, when thinking about what is at stake, it is the right decision. A moratorium provides several chances

and gives time to conduct an in-depth assessment of the effects on human rights for r vulnerable groups. When using this in practice, it is highly recommended to choose a comprehensive approach that focuses on human security and not on the securitization of irregular migration. This would even be possible without a moratorium of facial recognition systems. A good start could be to not directly assign a category in Eurodac when recording the data, but, instead, let experts first assess the vulnerability of each individual, irregular migrant before proceeding any further. The world is in chaos at the moment – particularity in areas that are witnessing a massive migration movement. Exactly for this reason, people need to be very careful with how to address this phenomenon. When people start zooming in on what makes individuals vulnerable, and stop focusing on presumption of potential, unfounded danger, biometrics can be applied with diligence and be an asset to everyone in the migration process.

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