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Data Discrimination & Algorithmic Bias at the "Digital Fortress Europe":

An in-depth human rights analysis of racialization and gendering of asylum seekers from the Global South in the large-scale EU-biometric database Eurodac.

Author: Thea Sofie Andersen
Supervisor: Maria Daniella Marouda and Fany Papaderaki

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Abstract

Digital technologies are changing the ways human rights are interfered and violated around the world and can be used to reinforce and reproduce racialized and gendered injustices and inequalities. Concerns has especially been raised on the impact of unregulated and exploitative digital technologies used to extract sensitive personal data from asylum seekers from the Global South by actors in the Global North. The European Union (EU) has been at the forefront in the development of digital technologies powered by artificial intelligence (AI) and is a strong proponent of digital solutions to "manage" migration. Thus, this has resulted in digital tools being involved in almost all aspects and processes in the current management of migration and asylum. While the past human rights implications of the "Fortress Europe" have been widely scrutinized and criticized, future ones, spurred on by the digital innovations and tools in the "Digital Fortress Europe", needs to be examined. Although various systems and regulations are in place to protect asylum seekers when it comes to digital practices, for instance the ones governed through the Charter of Fundamental Rights of the European Union (CFR) and the European Union's General Data Protection Regulation (GDPR), several weaknesses in the human rights protection of asylum seekers have been pointed out especially relating to this groups right to privacy, data protection, equality and non-discrimination. This thesis, therefore, aims to investigate the human rights implications and risks in the EU's digital migration and border practices. Focus will be on the large-scale biometric database Eurodac, which has become one of the most important digital solutions in the current EU migration and asylum system. This database have received several concerns on its increased convergence between migration and terrorism, and its impact on asylum seekers. The proposed regulation of Eurodac has especially been worrisome regarding the seemingly weak protection of asylum seekers right to privacy, data protection as well equality and non-discrimination.

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Table of Abbreviations

AI Artificial Intelligence

CAT1 asylum seekers

CAT2 irregular border crosser

CAT3 illegally found in member state

CAT4 searches by law enforcement

CAT5 searches by Europol

CFR Charter of Fundamental Rights of the European Union

COE Council of Europe

EC European Commission

ECHR European Convention on Human Rights

ECRE European Council on Refugees and Exiles

EDRi European Digital Rights

EDPG Eurodac Data Protection Group

EES Entry/Exit System

ESCG Eurodac Supervision Coordination Group

EPRS European Parliamentary Research Service

EU European Union

EU-BMS European Union's Biometric Matching System platform

EU-Lisa European Union Agency for the Operational Management of Large-Scale IT Systems in the Area of Freedom, Security and Justice

Eurodac European Dactyloscopy Database

Europol EU Agency for Law Enforcement Cooperation

Frontex European Border and Coast Guard Agency

GDPR General Data Protection Regulation

ICCPR The International Covenant on Civil and Political Rights

ICESCR International Covenant on Economic, Social and Cultural Rights

OHCHR United Nations Human Rights Office of the High Commissioner

LED Law Enforcement Directive

SIS Schengen Information System

STS Science and Technology Studies

TEU Treaty on European Union

TFEU Treaty on the Functioning of the European Union

UDHR Universal Declaration of Human Rights

VIS Visa Information System

Key terms: Asylum seekers, European Union, Digital migration and asylum practices, Biometrics, Eurodac, securitization, Science and Technology Studies, Postcolonial feminist theory, right to privacy and data protection, right to equality and non-discrimination,

“Tell the sea after the news of my death
that I wasn't that thirsty to fill my lungs with his water
that I am only an extremely exhausted man
who suffered all his life long from poverty
who work all day long
to pursue a dignified life for his children
I wanted to flee like all poor people
I went to you, sea
to pull me out of the darkness
to take me to a brighter trajectory
You misunderstood me, sea
I told you that I wasn't thirsty”.

- Mahmoud Bakir, Palestinian refugee passed while trying to reach the Greek coast (ECRE)

1.0 Introduction

The proliferation of new and emerging digital technologies powered by artificial intelligence (AI), has since the early 2000s expanded the European Union (EU) and its member states' toolkits when it comes to migration and border control. The EU's initial response to the 2015 "refugee crisis", where refugees mainly from Syria, Afghanistan and Iraq were fleeing war and persecution, was to initially securitize and militarize the borders. This has later been baptized as "Fortress Europe". These border practices fostered by the logic of securitization, has cultivated into concerns of the victims of these countermeasures, namely vulnerable asylum seekers. Insufficient EU migration policies combined with this prevailing logic has resulted in pushbacks and ill-treatment at the EU border, as noted by the UN Special Rapporteur on the human rights of migrants, as well as other UN agencies, intergovernmental organizations, and human rights organizations (ECRE) (2022, 31). Once again, the Mediterranean Sea has become the symbol of "watery graves", during the horrific tragedy in the Greek shore on June 15th, where a boat carrying 750 asylum seekers from Palestine, Syria and Pakistan capsized - representing the deadliest episode since 2015 (Henley 2023).

While the past human rights implications of the "Fortress Europe" have been widely debated and criticized, future ones, spurred on by the digital innovations and tools in the "Digital Fortress Europe", needs to be examined. Hence, in the aftermath of the "refugee crisis" in 2015, there have been several efforts towards "managing" migration, which has been fueled by technological fixes turning Europe into a "Digital Fortress". The European borders are no longer solely consisting of physical walls, hence, the virtual or technological walls can be considered to be being utilized to separate the Global South and North, or "Us" and "Them" in Europe, powered by large-scale databases, advanced surveillance systems, and intricate biometric screenings. As noted by an asylum seeker seeking international protection in the EU, he felt like he was not only met by physical walls but also technological walls wherein; "We are Black and border guards hate us. Their computers hate us too" (Molnar 2020, 1). This transformation, according to Young (2016, xxiv) represent "the enfolded postcoloniality of population control and insurgency in which we live today". Moreover, there has been concerns on how it seems like asylum seekers are treated as laboratory when it comes to digital border practices. Although various systems and regulations are in place to protect asylum seekers in digital practices, found in the Charter of Fundamental Rights of the European Union (CFR) and the European Union's General Data Protection Regulation (GDPR), there are several weaknesses in the human rights protection of asylum seekers. This especially relates to the right to privacy, data protection, equality, and non-discrimination.

In recent years, there have been increased efforts to comprehend digital technologies' impact and effects on human rights. Tech-companies, political forces and scholars still lean on the idea of technological determinism, stating that these digital tools are inherently neutral and objective, as it operates outside of both political and social contexts. On the other hand, postcolonial feminist theory, securitization theory and Science and Technology Studies (STS) have criticized these statements and argue that digital tools should not be viewed as a priori neutral or operating without human interferences. This has led to several questions, especially to what extent the existing inequalities and discrimination could influence digital technologies, and if these tools have the potential to produce algorithmic bias and data discrimination. Thus, there is a growing awareness of how digital technologies not only can reproduce, but also amplify existing forms of oppression, such as racism and sexism. In line with this, UN Special Rapporteur on racism and xenophobia emphasized the need to understand digital tools as inherently non-neutral nor objective, whereas; "data collection is not an apolitical exercise, [...] especially when powerful global north actors collect information on vulnerable populations with no regulated methods of oversights and accountability" (Fallon 2020). Hence, digital technologies can be powerful tools which have the potential to exacerbate inequalities, especially along racial and gender lines.

1.1 Biometric technologies: Eurodac

One of the core transformations in the EU bordering processes, is with the one of biometrics. Thus, the collection, processing and storing of asylum seekers' personal sensitive data represents an important aspect of the current EU migration and border management. The European Dactyloscopy Database (Eurodac) has become one of the most instrumental tools and databases for the current management of asylum seekers. Its initial purpose was to facilitate the application of the Dublin regulation in determining the member state responsible for an application for international protection and to prevent "asylum shopping". Moreover, even though the European Commission's (EC) impact assessment indicated that Eurodac will comply with the human rights provisions in the CFR – several contradictory adjustments and regulations have been implemented since that time. Hence, these last years has seen an increased expansion of Eurodac's mandate, interoperability, and operationalization, especially through the proposed regulation. The database has received criticism, especially amongst various human rights organization and data protection agencies, such as the Eurodac

Supervision Coordination Group (ESCG) and European Data Protection Group (EDPG). Eurodac has been criticized for fueling the interconnectedness between migration management and law enforcement - where the convergence between migration and terrorism, and asylum seeker and terrorist, are not easily distinguished in the current system. Thus, this development can potentially target and criminalize asylum seekers. Others have criticized biometrics to produce algorithmic bias and data discrimination, and questions has been asked if Eurodac potentially can have traits of embedded algorithmic bias and data discrimination. The proportionality and necessity of the Eurodac system has been questioned.

1.2 Research Question

Keeping these rationales in mind, this thesis will investigate and provide an analysis of the large-scale biometric database Eurodac. With a special eye out for these growing concerns, there is a need to engage with the potential human rights risks and implications on asylum seekers, focusing on the rights of privacy, data protection, equality and non-discrimination. This analysis can be particularly relevant in times of more extensive measures at the EU border, as well as the mainstreaming of far-right rhetoric across the EU member states. As well as with the current operational practices, where accelerating sensitive data are being generated, automated, and accessed for objectives of migration - there is an urgent need to critically engage with these impacts on asylum seekers. As a growing and highly timely phenomenon, human rights implications of emerging technologies should be analysed in-depth – which is what this thesis aim to do through analysing the following research questions (RQ):

RQ1:

> *"What risks and implications can the large-scale biometric database, Eurodac, have on asylum seekers' right to privacy and data protection, and equality and non-discrimination?"*

RQ2:

> *"How can algorithmic bias and data discrimination in the large-scale biometric database, Eurodac, affect asylum seekers from the Global South?"*

Building on the theories of Securitization, Postcolonial Feminist theory, and STS, this thesis will provide an insight into the complex relationship between the social, political, and technical dimensions of the EU migration and asylum system. Thus, this will contribute in a

deeper understanding to grasp the embedded dynamics and trajectories of the "Digital Fortress Europe". It will in addition lay the fundament to critically engage with the socio-technical context Eurodac operates within. At the same time, gendered and racialized power asymmetries between the Global South and North will be investigated in the analysis to examine the impact of potential racialized and gendered bias and discrimination in Eurodac's algorithms and data.

1.3 Structure of the thesis

The structure of this thesis will be as follows. In the first section, chapter 2 will offer a clarification and operationalization of terminology. Chapter 3 will explain the research method, while will be based on a qualitative single-case study of Eurodac, and a desk basked literature review. Chapter 4 will include the literature review which will be based on the discussions of EU migration and border system, digital practices, and biometrics, focusing on Eurodac. Chapter 5 will provide the theoretical framework of securitization, postcolonial feminist theory and STS. Having established the theoretical and methodological part of the thesis, chapter 6 will provide the empirical evidence, whereas chapter 7 and 8 will provide the analytical part, where finally a conclusion will be reached. In, addition, Chapter 9 will provide potential recommendations.

2.0 Terminology

This subpart will clarify relevant terms and provide operationalizations which is used throughout the thesis to get an insight into the conceptual framework.

2.1 Human rights: Regional European and international Legal framework

This part will clarify the international and regional European legal human rights framework, focusing on the European system. Digital technologies powered by AI inhabits both have advantages and disadvantages concerning human rights, rule of law and democracy. Hence, they can be used to provide means to exercise and defend human rights, the same goes the other way, where they can be used to violate them. As noted by the United Nations Human Rights Office of the High Commissioner, it is evident that digital technologies are changing the ways in which human rights are impeded and violated around the world (OHCHR 2023). The same goes for asylum seekers, as it can be used as a tool to strengthen their rights, but also used on them to weaken their rights. Thus, asylum seekers can be said to constitute a vulnerable group. This can be a result of various reasons, they might have language barriers or difficulty understanding the legal system, traumas from persecution or from state-sanctioned violence. Concerning the legal system, they might not be aware or know the rights they have as asylum seekers, and especially not when it comes to their right to privacy and data protection. In addition, unfair or invasive digital border practices might be difficult to fight. This ultimately puts the asylum seekers in a vulnerable position at the EU border. In addition, the power asymmetry between data users, and data subjects can also be another problematic concern. Henceforward, this lack of or limited awareness and knowledge of the human rights also applies across other actors, such as data users and tech-companies.

Although the lack of knowledge of rights within the landscape of digital border practices can be considered as weak, at the same time, a human rights lens or perspective can contribute in grasping the complexities between technology and social impacts, and be useful when analysing the impacts of digital tools including biometrics. Hence, as the human rights framework already has defined rules and principles, this can contribute to the understanding of how digital tools are used and its potential risks – as these should operate within the human rights framework. In addition, this lens can provide with a understanding to identify where the responsibility of these risks is coming from. It can also, in addition, the human rights perspective can also propose new implementations to safeguard human rights.

To specify and narrow down the focus, emphasis will be on the regional European system, Eurodac and related specific rights: privacy and data protection, and right to equality and non-discrimination will be emphasized. Both primary and secondary law will be provided,

however, this thesis will mainly focus on the primary law. It is outside this thesis scope to also provide an in-dept examination to secondary law. However, the international instruments will also be mentioned, but only as a general overview. Thus, focus will be mainly on the risks and implications of Eurodac focusing on the right to privacy, data protection, equality, and non-discrimination. As these can be considered as connected, this will be separated as two distinct but connected overviews, where right to privacy and data protection are one variable and right to equality and non-discrimination the other variable. Hence, it will aim at providing in-dept empirical evidence of the current situation of Eurodac. The following sub-sections will outline and provide clarification on the legal instruments protecting the specific rights provisions, focus will be especially on CFR.

2.1.1 Right to privacy and data protection

International human rights concerning right to privacy and data protection, is the following two international human rights mechanisms which are covered protected and enshrined in the International Covenant on Civil and Political Rights (ICCPR) Article 17, and in the Universal Declaration of Human Rights (UDHR) in Article 12.

When it comes to the regional framework of human rights in Europe, the right to privacy and data protection is enshrined in the Articles 8 and 7 of the CFR and Article 8 in the European Convention on Human Rights (ECHR). Article 8 of the CFR protect the right that “Everyone has the right to respect for his or her private and family life, home and communications”, whereas Article 8 (1) protects the “right to the protection of personal data concerning him or her”, wherein 8 (2) “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. Everyone has the right of access to data which has been collected concerning him or her, and the right to have it rectified”.

Privacy and data protection also protected by secondary law in the General Data Protection Regulation (GDPR) and The Law Enforcement Directive (LED). These two secondary law instruments are applied to automated processing and provide a legal framework for biometrics in the EU. Thus, within these instruments the users that utilizes personal data, must process personal data lawfully in a transparent way and comply with a set of criteria such as data quality and data accuracy and retention time (Reichel and Molnár 2023, 160).

2.1.2 Right to equality and non-discrimination

International human rights framework concerning the right to equality and non-discrimination are protected under Article 2 of the Universal Declaration of Human Rights (UDHR) which states that "every human being is entitled to all rights and freedoms "without distinction of any kind, such as race, colour, sex, language, religion, political or other opinion, national or social origin, property, birth or other status". The ICCPR and the International Covenant on Economic, Social and Cultural Rights (ICESCR) also obliges states to comply with non-discrimination.

Regionally, the right to equality is protected by Article 20 of the CFR where everyone should be treated equal before the law, whereas Article 21(1) of the prohibits discrimination, on "any ground such as sex, race, colour, ethnic or social origin, genetic features". Article 21(2) are protecting it through "within the scope of application of the Treaty establishing the European Community and of the Treaty on European Union, and without prejudice to the special provisions of those Treaties, any discrimination on grounds of nationality shall be prohibited". In addition, non-discrimination obligations and rules are also included in the Treaty of European Union (TEU), as well as case law. In the EU, the right to non-discrimination is also enshrined in digital technologies and algorithms, in both primary and secondary law as mentioned above (Madiega and Mildebrath 2021, 18-19).

2.2 Digital technologies and AI: algorithms and data

Digital technologies, AI, algorithms, and big data are all interconnected terms; however, an operationalization of these terms is necessary to understand the socio-technical fundaments. Digital technologies, also referred to as "digital tools" and "new technologies", are complex technical tools, and there exist no set definition on the concept. At the same time, this concept can be differently approached. However, as this thesis argue that digital technologies are embedded in complex socio-technical contexts, this thesis will utilize the definition offered by Faulkner and Runde (2019, 5) where digital technology refers to "the social aspect […] concerning the identity of digital objects, their use, and 'fit' generally within the social world". Thus, this definition offered by Faulkner and Runde emphasizes how technologies are interconnected to as well as how it inhabits technical and social components. Viewing digital technologies through a lens which acknowledge human interference is important to understand how it works in the "social world", thus, it do not see digital technologies as something that operates outside of human interference and the real-world. In addition, this

definition recognized how the users play an essential role in designing, informing and influencing the operationality of digital technologies.

Moreover, there exists no unified definition on the AI, however, as stated by the EU Agency for Fundamental Rights (FRA) should AI not be viewed as a single phenomenon, but rather through the lens of general technological and social processes and developments. Hence, the AI technology is a general term which refers to technology which commonly is understood as the increased automation of tasks fostered by both automatic decision-making as well as machine learning (FRA 2022, 18). Additionally, AI-systems refers to the "systems that display intelligent behavior by analyzing their environment and taking actions - with some degree of autonomy - to achieve specific goals" (EC 2018, 1). Furthermore, these AI-based systems, can either be purely software-based or be embedded into hardware devices.

In respect to algorithms, more broadly speaking this is produced by a sequence of commands for a computer to create input into an output. Algorithms can be used for for example predictive analytics. From a more technical perspective, this algorithm is firstly given a specific task (input), and fed with data (output) which results in a model that is being utilized in a task in the "real world". The algorithm can therefore be considered as "raw" in its input, however, it it used on a model which are being developed when the algorithm has been "trained on data" (FRA 2022, 18).

2.3 Biometric system technology: fingerprint and facial identification

In respect to biometrics, these are systems which in general aims to either identify, authenticate, or verify individuals based on either physical or behavioral characteristics and data. Physical characteristics can include everything from fingerprint, face, iris, hand geometry, and DNA, whereas behavioral characteristics includes for example signature, speech, and gait. Biometric algorithms refer to and are described as "recipes" for transforming a person's biological traits into what compromises a "digital representation in the form of a template (Magnet 2011, 21). It is compromised by an automated process which links identities across databases and networks, whereby the biometric system is usually based on pattern recognition (Jain, Ross and Prabhakar 2004, 4). More technically speaking, a biometric system can be considered as a pattern recognition system, which operates by utilizing "raw" biometric data from a person. The data that has been captured, are based on the extraction, which is linked to the biometrics feature or characterizing and are producing the biometric signature (Traore, Obaidat and Woungang 2019, 5). These signature or templates are then

stored into a database, which can either be centrally or locally stored, and used to check the identity and comparing them to new signatures. Biometric systems are moreover involved in three operational application modes or phases, namely the enrollment, verification, and identification. In the enrolment phase the biometric signature is being made, which then are verified and ultimately identified (2019, 5). It has also been registered that some biometric systems and technologies are more prone to fail to recognize or identify, which is usually referred to as "failure to enroll".

As this thesis will focus on Eurodac which currently utilizes fingerprints, but also potentially facial image (proposed regulation), focus will be on the physiological characteristics which are inherent to the human physiology. When it comes to fingerprint biometrics, this is the most common and popular form of biometrics. Fingerprints, as noted by Lu et al. (2019, 441-442) have an assortment of friction ridges that form in the development process of human beings, which makes it rare that other have the same fingerprint pattern or ridges. The glands or ridges underneath the skin, are consisting of a set which is unique to each individual. These distinct sets are possible to find and trace on surfaces such as the fingerprint scanners (Lu et al. 2019, 441-442). Not all individuals' fingerprints are recognized, such as elderly, children, Asian or manufacturer, and can be prone to fail to enroll or identify specific groups. When it comes to facial biometrics, this has been another popular form of biometrics but recently been scrutinized for being invasive, and as a result been removed from many countries. Facial image recognition biometrics mainly functions through recognition which compares facial patterns and individual facial details. As individuals can have a unique set of facial patterns, this makes it possible to trace – however, as mentioned above these biometrics also have an increased likelihood to fail to enroll certain groups and individuals, for example people of color or dark-skinned.

2.3.1 Eurodac

Eurodac is a digital database which is centrally store fingerprints of asylum seekers, irregular and illegal migrants. This database manages the European asylum applications in the EU, and started its operationalization in 2003. Moreover, Eurodac is managed by European Union Agency for the Operational Management of Large-Scale IT Systems in the Area of Freedom, Security and Justice (EU-Lisa). In addition, EU-Lisa manages the border practices of the operations and political implementation the three large-scale databases Visa Information System (VIS) and Schengen Information System (SIS II). Although VIS and SIS can be seen to connect to Eurodac, thesis aims at focusing on asylum seekers and the asylum procedure –

the rationale is therefore to focus solely on Eurodac and include EU-Lisa when it is relevant to provide an in-dept analysis. EU-Lisa control the data from the three different databases, through the platform European Union's Biometric Matching System (EU-BMS), which consists of an automatic search engine that is systematizing the biometric data (Tsianos and Kuster 2016, 239).

When it comes to Eurodac, it is responsible for comparing the fingerprints that is being collected by the member states and assisting in allocating and determining the member state responsible for the assessment of a claim for international protection (EU-Lisa 2022a, 5). The Eurodac Regulation applies to all EU member state as well as the Schengen countries (COE 2020, 53). The Eurodac Regulation helps in the determining the member state accountable for an asylum claim under the Dublin regulation. More recently, the increased interoperability of Eurodac has allowed law enforcement and EU Agency for Law Enforcement Cooperation (Europol), as well other designated organizations to have a access to the personal sensitive data of asylum seekers, however, under strict circumstances when there is a need to prevent, and detect terrorism for national security measures (EC 2023c). This increased interoperability started especially in 2015 but have extended rapidly in both form and scope. The increased interoperability of Eurodac, will according to EU-Lisa, be a positive development to ensure national security and contribute in security measures, as this opens up the possibility to monitor and cross-check the identity of asylum seekers, irregular and illegal border crosser and migrants (EU-Lisa 2022b, 59).

Regarding the operationalization of Eurodac, the database processes and compare fingerprints, and potentially facial image (proposed regulation). The fingerprints are usually taken by the national member states designated authorities, or front-liners. Eurodac consists now of five different categories, which includes and covers asylum seekers (category 1 (CAT1), irregular border crosser (CAT2), illegally found in member state (CAT 3), searches by member state law enforcement (CAT4), searches by Europol (CAT5) (EU-Lisa 2023, 8). Thus, it contains fingerprints of both asylum seekers and irregular migrants. The Eurodac biometric system works based on utilizing fingerprints from starting from the age of fourteen, and will potentially if the proposed regulation, which is still under negotiation, include the fingerprints and facial image from the six year olds (COE 2020, 53). When the fingerprint is being taken they utilize all ten fingers, and base it on plain and rolled fingerprints (FRA 2018, 125).

2.4 Asylum seekers

Seeking asylum is a fundamental right which is enshrined and stipulated in Article 14 of the UDHR. As noted in Article 14.1, "Everyone has the right to seek and to enjoy in other countries asylum from persecution". Furthermore, article 14.2 highlights that; "This right may not be invoked in the case of prosecutions genuinely arising from non-political crimes or from acts contrary to the purposes and principles of the United Nations". Hence, the right to seek asylum is an international obligation for states and recognized in the 1951 Refugee Convention. Moreover, the terms asylum seeker, refugee, and migrant are often used interchangeably. However, this thesis emphasizes the importance of distinguishing these terms, and chose to refer to asylum seekers throughout the paper. This thesis will utilize the comprehensive definition offered by Amnesty International (2023) where;

> "An asylum seeker is a person who has left their country and is seeking protection from persecution and serious human rights violations in another country, but who hasn't yet been legally recognized as a refugee and is waiting to receive a decision on their asylum claim. Seeking asylum is a human right. This means everyone should be allowed to enter another country to seek asylum".

Furthermore, as this thesis aims to investigate potential racial and gendered injustice and inequalities, will this thesis focus on asylum seekers from the "Global South". There is therefore a need to clarify the term Global South. However, it also recognizes the inherent politics and limitations of the terminology of the North-South divide. At the same time, the distinction between the Global South and North can offer a fruitful analytically framework and tool to engage with and investigate inequalities stemming from colonialism, as well as the patterns of exclusion and inclusion (Waisbich, Roychoudhuryd and Haug 2021, 2090-2091). Henceforward, Global South is viewed through the lens offered by Dados and Connell which highlights the importance of investigation these issues, as the term "references an entire history of colonialism, neo-imperialism, and differential economic and social change through which large inequalities in living standards, life expectancy, and access to resources are maintained" (2012, 13).

2.5 Racial and gender dimension: data discrimination and algorithmic bias

Race and gender are of importance concerning the socio-technical dimensions of migration and border practices, and as this thesis seeks to investigate potential racialized and gendered inequality it see the need to clarify these terms. According to Hall (1993, 298), remains race as an social construction and representation wherein it functions as an;

> "[…]organizing category of ways of speaking, systems of representation, and social practices (discourses) which utilize a loose, often unspecified set of differences in physical characteristics as symbolic markers in order to differentiate one socially from another".

Hence, race is solely a social construction, and do not constitute a biological essence (Kobayashi and Peake 2000, 393). This thesis utilizes this term in line with legal tradition, however, do not accept theories that claim that there are separate human races. Moreover, racialization and gendering refer in this thesis to the gendered and racialized stereotypes as well as the processes and representation of the "Othering" of asylum seekers. Racialized and gendered narratives and stereotypies are discriminatory and prejudices on certain racial groups which works as representations which is usually referred as "threats", "undeserving masculine", "feminized vulnerable" (Sachsedera, Stachowitscha and Binder 2022, 4676). Whereas the "other" are being stereotyped and created from asymmetrical power relationships. Thus, this thesis argue that gendering and racialization can be of importance as an underlying factor in digital border security practices.

Moreover, when it comes to discrimination, this thesis will utilize the definition offered by COE (2023), where "[…]people are treated less favourably than other people are in a comparable situation only because they belong, or are perceived to belong to a certain group or category of people". Discrimination can be considered as a result of prejudices, and individuals and groups may be discriminated against because of their race, gender, ethnicity, origin, race, religion or culture. Furthermore, bias can refer to several things, such as social and technical bias. Social bias is embedded in the societal constructions and structures affecting groups and individuals based on prejudice, stereotypies and discrimination. Especially marginalized or underprivileged groups are subjected to bias related to either their gender or race. Technically, regarding algorithmic bias it refers to when these biases influence and affect outcomes of algorithms (Kordazadeh and Ghasemaghaei 2022, 390). These algorithmic biases can be considered to have a much larger affect and put certain groups and individuals in an exponential disadvantage, as it operates without the social control mechanisms that are apparent in the society. Algorithmic bias can more difficult to examine, as these usually operates in complex technical systems, which makes it difficult to clearly indicate when algorithmic bias is taken place in either a biometric system or predictive policing. Thus, algorithmic bias refers to when there are systematic and repeatable errors that creates unfair outcomes, which privileges one group over others (European Migration

Network 2022, 14). Data discrimination and algorithmic bias hence can be a result of either consciously establishing algorithms that are biased, unrepresentative data training, bias in labelling schemes, or inadequate mathematical and statistical functions (Madiega and Mildebrath 2021, 17).

3.0 Methodology

The methodology utilized and chosen for this research is a qualitative single-case study and a desk based-literature review. The following sections will describe the rationale for this methodological choice, and the data collection through desk-based literature review, as well as how the data was analysed and the limitations of these methods.

3.1 Qualitative single-case study

Firstly, this thesis argues and recognize that it is difficult to choose a methodology that will provide a comprehensive picture as well as grasping the interplay between migration and technology. Thus, grasping the digital border practices in the EU and capturing the real-world impacts is a difficult task. However, to capture some of the complexities of this interplay, this thesis will base its research method on a qualitative in-depth case study and include a literature review. A qualitative case study method was utilized to allow to empirically engage with Eurodac. A case study, as suggested by Yin (1989, 23) "investigates a contemporary phenomenon within its real-life context; when the boundaries between phenomenon and context are not clearly evident […]". This methodology can be considered to have both strengths and weaknesses. Thus, the strengths by conducting a case study, is that it can allow the possibility to gain a high degree of validity. As suggested by Andersen (2013, 156), the possibility to achieve a high degree of validity increases, as it allows for a comprehensive collection of the gathered information. On the other hand, as noted by Andersen, a central weakness and limitation of case studies is that the data from case studies cannot be recognized as being statistically representative (2013, 156).

The EU-large scale database Eurodac is the case study in this thesis. Thus, as Eurodac is a centrally stored database, but increasingly more decentralized involving several parties such as member states, law enforcement, asylum seekers, and other designated authorities and organizations, it will focus on the general trends regarding the risks and implications of Eurodac. At the same time, this thesis recognizes that it is difficult to talk about an overreaching or a coherent EU migration system, however, it is possible to investigate trends in certain trajectories and dynamics which can give a possible indicator on the current state in both EU and its member states – which this thesis aims to investigate. Focus will be both on its operationalization and institutionalization. Hence, the choice of focusing on Eurodac, stems from the increased scrutiny and criticism of not only the current EU migration and border system, but also of biometrics and Eurodac - fostering various questions relating to the

impacts on asylum seekers. Several human rights organization and data protection agencies has criticized Eurodac, especially after the proposed regulation and questioned its justification and legitimacy both in proportionality and necessity. The growing concerns of the increased interoperability, criminalization and data retention time has particularly received scrutiny amongst these groups. Recent human rights reports have criticized the large-scale databases in EU for its algorithmic bias and discriminating data, which interferes asylum seekers' right to data protection, privacy as well as equality and non-discrimination. Still, this thesis argues there is some gaps or weaknesses in the academic field regarding its initial stances and perspectives on the different underlying trajectories that explains the increased expansion and presence of algorithmic bias and data discrimination. Some approaches this solely from a technological deterministic perspective, others focus solely on the securitization and threat perspective. Thus, within the field of digital technologies and migration, there has been not paid great attention to the underlying socio-technical structures, as well as the drivers of these traits. This thesis therefore sees the need to try to grasp the complexity of EU's bordering practices, by highlighting emphasis on the embedded racialized and gendered dimensions where power asymmetries and inequalities can potentially contribute to the discussion and understanding of both the EU migration and border system, as well as its digital practices.

The data will be based on both primary and secondary sources, including statistics. Qualitative data is most fitting for this project because the research question seeks to grasp real-life impacts of Eurodac. As qualitative research is normally applied when there are few units of research, which require an in-depth analysis, wherein a case study aim to investigate a contemporary phenomenon within a real-world context – which is well-suited and appliable to this thesis purpose. Moreover, when it comes to the rationale behind adopting a case study, this is chosen to try to capture the complexities and trends in the underlying trajectories in not only migration and technology, but also to grasp and gain in-dept empirical data and evidence on Eurodac. This thesis seeks to analyze in what extent Eurodac, and digital border practices relates to its contextual framework, namely the current political, social, and legal factors and trajectories. Moreover, the aim of this thesis is to provide an in-dept analysis and investigation of Eurodac, and therefore chose to focus on a single case through an inductive method. Moreover, this thesis aims at contributing to both the understanding and discussion surrounding EU migration border practices and asylum procedures from a human rights perspective and provide insights which might fuel this discussion further. Henceforward, to answer the two research questions and investigate the dimensions of particularly race and

gender in EU-biometrics at the border, a literature analysis will be conducted to grasp the technical, societal and political structures Eurodac operates within, as well as to contribute to the understanding of risks and implications. The data, thus, will in this thesis be based on both primary and secondary sources, which will include statistics to examine data in Eurodac. The literature chosen is based on and highly cited, peer-reviewed and reliable sources, which includes scholars from different perspectives to ensure unbiasedness and control. The statistics utilized will solely be based on highly reliable and valid sources, which namely will be from EU-Lisa, FRA, The European Union Agency for Asylum (EUAA) and Eurostat.

3.2 Desk-based literature review

The scope of the literature review includes instrumental themes and topics embedded in the contextual socio-technical trajectories and dynamics in the current border and migration management in the EU, and at digital border practices and Eurodac, with a special focus attributed to human rights. Alongside these issues, are social dynamics highlighted, focusing on a global power perspective, Global South and North and racialized and gendered representations of asylum seekers at the EU border. Since Eurodac and data discrimination and algorithmic bias has been discussed in earlier academic work, this thesis argue it will provide adequate and sufficient research to do desk research. Thus, there exists growing literature especially on digital border practices and biometrics both within and outside the EU. Even though there is growing academic presence in this specific field, this thesis also want to highlight that there has not been paid great focus towards racialized and gendered inequalities, and the implications and risks of algorithmic bias and data discrimination in digital technologies utilized at the EU border. Hence, this thesis argues that there have been few scholars which has analyzed how constructions of the "migration crisis" has been developed through various processes of racialization and gendering of asylum seekers from the Global South. Thus, what seemingly can be considered as a lack of intersectional and transnational perspectives in the literature on digital border and migration practices can negatively affect the understanding and logics inherently embedded in the dynamics of migration and digital technologies. This thesis, hence, underlines the importance of including these dimensions in future investigations of digital border and migration practices, and provide insights which includes other approaches such as the one of the logics of securitization, STS and technological determinists. In addition, another weakness in the literature is that there seem to be little attention in the literature focusing on the national context of practices of biometrics

and Eurodac. Thus, it also recognizes at the same time the difficulty of getting a comprehensive picture of the national contexts, especially regarding biometric databases as these are heavily technical. In addition, the lack of access and information provided by the member states especially regarding their digital border and migration practice, can seemingly be contributed to the lack of transparency and accountability. Hence, the national context plays an important role in understanding the different trajectories in their handling of asylum procedures and processes, and how the EU can contribute in enhancing regulatory frameworks. This thesis also wants to highlight the complexity of not only the EU migration system and technology, but also Eurodac, and recognizes the reason why several researchers refer to it to the "Pandora's box". Thus, Eurodac is not solely a tool which is used for the management of asylum applications, is it also dependent on social and political factors. The literature utilized in the literature review consisted mainly of academic literature from book chapters and journal articles. To ensure unbiasedness, several different perspectives have been included, which consists of peer review and highly sourced data. In addition, this thesis will utilize grey literature such as reports provided by human rights organizations and relevant EU agencies. As both digital technologies and digital biometrics can be considered as a relative new phenomenon's most literature and sources was gathered from early 2000s to 2023.

4.0 Literature review

Multiple disciplines have tried to grasp and investigate the interplay and complexities of the intersections of migration, technology, biometrics, and human rights - including international relations, computer science, sociology, law, international relations and political science. The following sections are divided into three sub-parts, which will offer a comprehensive picture and explaining the different trajectories and dynamics in the scholarly attributes to migration and border control, then go into the discussion of digital technologies and biometrics, focusing on Eurodac. This approach is deployed to create an insight into the socio-technical contexts, which can be considered as embedded in the structural and contextual framework of digital technologies.

4.1 "Fortress Europe"

This subpart will provide literature on the different contextual dynamics in the current EU migration system. Thus, as mentioned above, it is not possible to talk about a coherent migration policy system in Europe (Geddes, Hadj-Abdou and Brumat 2020; Soysüren and Nedelcu 2022), still, certain aspects of migration control have been pointed out to get an indicator of the current system. In and beyond the EU, the issue of migration and border control has particularly been understood within the frames of the securitization logic, as well as "crisis" over the last decade. Whereby EU and its member states has approached the "refugee crisis" by perceiving it as either as an exceptional event or as a state of constant crisis. However, the academic debate on increased securitization efforts within the EU was already widely recognized in the 1980s literature, as it already existed a wide consensus amongst scholars in the migration field (Tsianos and Kuster 2016, 236). The exacerbated efforts towards militarizing and securitizing the EU borders has become increasingly more apparent in the migration policies after the "refugee crisis" in 2015, which produced a seemingly close connection to migration and terrorism.

At the same time, some scholars argue that securitizing efforts has not been deployed in the EU. According to Boswell (2007, 606), what rather has characterized migration control has been the "absence of securitization". In her view, the public discourse across the EU member states has not shown efforts in attempting to link migration and terrorism, and the policy practices has rather been to use migration control for the purpose of countering terrorism, which she argue has not been to control migration. Thus, it can be questioned that the so-

called “countering of terrorism” in the EU, as stated by Boswell are strongly connected to the control of migration. Boswell further states that migration control practices have not been colonized and that public and political discourse will not affect organizations and policies as these based on robust fundaments (2007, 607). At the same time, most of the literature within the field of migration has recognized that there has in fact been securitizing and militarizing efforts in the EU, which has been fostered by both public and political discourse. However, there has been differences on the perspectives on the underlying reasoning behind the securitizing efforts in the EU migration and border system – this will be portrayed in the following sections.

Jeandesboz and Pallister-Wilkins (2015, 115) offers a conceptualization of “crisis labelling” which they argue have dominated the institutional processes concerning the migration and border control. This crisis labelling puts events outside what they refer to as “normal” and highlight how this crisis labelling fuels implementations of emergency policies and measures, as well as “[…] masking more routinised forms of control developed over time”. This according to them have resulted in affecting and influencing the institutional and political practices within the contemporary migration and border control (2015, 115). According to Léonard and Kaunert, there has been significant indicators that the “migration crisis” was closely linked to security, wherein much of the EU countermeasures and practices was deployed to tackle and response to these “threats” (2022, 1427). At the same time, Sachsedera, Stachowitscha and Binder (2022, 4670-4671) argues that the “crisis labelling” should not solely be framed as an objective urgency in the scope of migration. In their view, this use of crisis within the EU system should be perceived through the lens of “[…] a complex societal process that is steeped in ideologies, value judgments, and normative assumptions” (2022, 4671). They further argue that the processes of crisis labelling within the EU creates and translates into the embedded gendered and racialized power asymmetries in its institutional framework (2022, 4677). In their view, thus, EU’s and its member states has shown traces of selective crisis labelling, where these embedded ideological and normative factors may point to the reason why certain asylum seekers coming from the Global South are immediately framed under an objective of crisis and emergency, whereas for example Ukrainian refugees fleeing the Russian invasion was never framed as a crisis or exceptional event in the EU and resulted in stark contrasts in treatments (2022, 4670-4671). This is a valid point, which can show how EU might selectively utilize “crisis” and increase its countermeasures when it gains them.

In line with Sachsedera, Stachowitscha and Binder, other authors have emphasized the need to view the crisis narrative alongside the ideologies, value judgements and normative assumptions. Several authors have focused on EU migration and border control through the lines and dimensions of race and gender (Sjoberg, Hudson and Weber 2015; Walby 2015; Hoijtink and Muehlenhoff 2020). Hoijtink and Muehlenhoff (2020, 368) highlights how race and gender play an instrumental role in the current EU migration and security landscape, wherein these dimensions are interconnected in the construction and legitimization of the understandings of the current crisis labelling and narrative (2020, 368). This crisis narrative is shaped by gendered and racialized inequalities which in turn creates and reproduce power hierarchies which ultimately shapes decision-making, institutional policies, and processes in the EU, according to Dines, Montagna, and Vacchelli (2018, 813). Sachsedera, Stachowitscha and Binder, similarly argues that the dichotomy which is currently circulating in the EU between the so-called "non-European's" and "European's" are reproduced in "othering" processes of asylum seekers in the current migration system. In their view, are racialized and gendered narratives and stereotypies on certain asylum seekers from specific countries deemed as a either a security threat, violently unpredictable, terrorist, or unknown potential criminal (2022, 4676). This type of stereotyping the "other" as a threat, is an underlining factor of representing race difference through which the "other" is "[…] constructed, excluded and fetishized under asymmetrical power relationships" (Hall 1997, 257).

Additionally, the narratives of the potential "security threat" these non-European asylum seekers carries, "justifies" intrusive and invasive practices across EU and its member states. Sachsedera, Stachowitscha and Binder (2022, 4676) draws a parallel to the current treatment of asylum seekers in the EU by comparing the colonial practice utilized on the colonized, and argues the current surveillance and categorization that were used on the colonized are much of what we see are being done with asylum seekers at the EU border. In their view, are both the current surveillance and categorization of asylum seekers at the border and the formerly used on the colonized in close connection – as this were and are used to control the racialized and gendered threat of the "other". Similar concerns have been deployed by Mamdani (2020, 103), which argues that the underlying dynamics characterising contemporary migration politics in across the EU member states should be understood by having strong connections to the colonial and historical processes of both state formation and power hierarchies. Natter and Thiollet (2022, 1518) also emphasize the need to understand how migration politics and its institutional processes are set up by a complex of power relations, which often can influence

policy-setting and decision-making in the EU. According to Sachsedera, Stachowitscha and Binder, the representation of Europe or Global North are prescribed and viewed as the "gold standard", whereas to asylum seekers from the Global South are represented as "culturally backwards" and inferior as they are "[…] consequently evaluated on the basis of universalized European norms associated with rationality and masculinity that reproduce post-colonial spaces as irrational and feminine" (2022, 4676).

4.2 "Digital Fortress Europe"

As the literature have covered the different contextual dynamics and framings of the EU migration system, this next sub-part will focus on the specific aspect of digital technologies and biometrics in the EU, providing different perspectives of the dynamics and trajectories of the digital migration and border practices. Trauttmansdorff and Felt (2021, 13) brings the notions of crisis into the discussion of digital technologies and argue the crisis labelling can exacerbate the idea of the need to find solutions and manage these through what they refer to as "technological fixes". These technological fixes are a representation of the member states and EU's need to "manage" these threats outside the "normal politics", and how these are continuously justified and legitimate with the use of various technologies to surveillance, target and control asylum seekers (2021, 13). Hence, in line with Trauttmansdorff and Felt, the increased desire for states to "manage" migration and border control through technological means, can be said has resulted in the fact that digital technology has been introduced and penetrated almost all parts of the current migration and asylum systems. As stated by Beirens (2022-7-8), has this been visible through the instrumental role these plays in the asylum procedures, where various digital tools are used in the identification, registration, and processing of personal sensitive data. The development and instrumental role of Eurodac, SIS and VIS have become especially important tools to these procedures, as well as at the same time ensure national security (Soysüren and Mihaela Nedelcu 2022, 1929). As a response to the COVID-19 pandemic we witnessed an exponential reinforcement and introduction of new digital tools in migration and border control where "temporary solutions" were introduced to keep the the national security control. However, many of these temporary solutions became the new normal in the current asylum processes, which fosters several questions on its effect on asylum seekers rights, as stated by Beirens (2022, 4-5). Various authors have raised concerns on these new digital innovations and the experimentation on the digital borders. Madianou (2019, 594) states, refugees and asylum seekers are being treated in

many ways as a laboratory for the implementation of digital practices in the EU, and term this as technocolonialism. In the same line as Madianou, Bohmer and Shuman (2018, 80) argues there have been many instances where asylum seekers are used as test subjects for what is considered as unreliable or invasive digital tools, as well as untested without taking into consideration the impact of their interference with human rights. One technology that has received scrutiny amongst scholars has been with one of biometrics, as noted Jacobsen (2015, 31).

Moreover, it has been developed several new terms relating to and referring to the increased digital border practices, such as “Smart borders”, “iBorder”, “Big Borders”, “bio-bordering”, “digital border”, “cyber fortress” and “Digital Fortress” (Amnesty International 2019; Ahmed and Tondo 2021). These terms all highlights and elaborates the instrumental role digital technologies plays both from a security perspective and of the current treatment of asylum seekers at the border. Hence, a border is no longer viewed solely as a physical wall around a nation-state territory, the contemporary border is now based on a large framework of digital technologies, as stated by Aas (2011, 296). As a result, the dependency of digital tools has created what Molnar (2020, 1) describe as, “technosolutionism”, wherein border monitoring systems in the EU and its member states continuously inform decision-making in the current migration and border management which in Molnar view are not legitimate and justifiable. In many ways have digital technology has created a new border which works as an “obligatory passage point” (Latour 1987, 132) that works as a selection mechanism for asylum seekers at the EU border, according to Molnar (2019, 7). She further states that migrants and asylum seekers can be considered as victims of these techno solutionism countermeasures taken within the EU. Hence, there is an increased limitations and risks to uphold and safeguard human rights when technology and measures are taken in a “crisis” or in a state of exception.

The public perception of technology is often understood as inherently neutral and objective, and there are also various authors that lean on and are strong proponents of this idea. Technological determinism fuels the idea that technology determines social change and are operating as an autonomous entity, without interference from political and social forces. Dafoe (2015, 1048) argue that humans do not have control of the current and future technological developments, and states that digital technologies work outside social and cultural context as an independent entity. Contrary to these technological determinist approaches, various authors have approached this theory and idea through a critical lens. As early as in the 1980s, Winner pointed out that technology is not a neutral and objective tool,

and argued technological determinism fails to include important aspects embedded in these tools. According to Winner (1986, 29), it is instrumental to understand how these technologies are embedded in a complex socio-technical landscape and should not be seen as inherently neutral. Winner further argues that the technical structures are embedded in not only social justice and power dynamics, thus, these tool should not be seen as neutral a priori. These tools represents a reflection of interests of the ones who design it (data users) and frames the same inequalities embedded in the social structures (1986, 29). In line with Winner's argument, Scheel, Ruppert, and Ustek-Spilda (2019, 583) emphasize that migration data is not objective nor neutral, but rather constituted by a complex interplay between political, institutional and commercial forces and interests. They further state that data practices authorize migration-related sentiments, which can, as a result, affect and influence border and migration policies (2019, 579). Hence, as further stated by Yeung these digital tools must be understood through the lens where humans are included in every process of technologies. Human are included in all aspects including the "[…] designing, modelling, data gathering and analysis, testing, implementation, operation and evaluation" (2019, 21-22). In her view, there is several challenges and risks when human decision-making in digital technologies is neglected or not recognized, as it removes both responsibility and accountability of the impacts of these tools (2019, 20). Thus, they can operate without the same social mechanisms that control the rules in the real-world, thus, fostering a vacuum wherein these can operate.

Moreover, several authors have pointed to the discriminatory or unfair set up related to data-supported decision-making. According to FRA (2022, 77) is there evidence of feedback loops in data sets, where feedback loops refer to biases in predictions that are increased when predictions of algorithms become the basis for future training datasets, which results in an increased potential of bias and discrimination against certain groups or individuals. In line with this statement, Borgesius (2018, 23) notes that there is a strong possibility that decision-making powered by AI can lead to algorithmic bias and data discrimination. Borgesius further states that this can be fueled in different ways, through purposeful discrimination or profiling of certain groups, in the definition of the targeted labels of category, variables, labelling, through collecting of the training data, the selection of the features and proxies. Thus, this discrimination embedded in algorithmic decision-making can be produced in both the design, testing and implementation of algorithms, or either through bias incorporated in the algorithm itself, or because of the way the results are interpreted by data users and third parties

(Borgesius 2018, 23). Henceforward, several authors have emphasized the inherent risk of these security and border technologies especially when it comes to asylum seekers, as result of the increased suspicion of asylum seekers. Bigo (2002, 67) argues that an inherent risk regarding asylum seekers and border technologies is that these technologies are designed to catch criminals or terrorists, resulting in fuelling an increased suspicion of asylum seekers and making them a priori suspicious, and ultimately perceived as potential criminals, illegal, and terrorists (Bigo 2002, 67). Moreover, Anderson et al. (2014, 4) argues that this suspicion circulating within the EU border landscape can be translated into a "negative decision-making environment", which can impact asylum processes and procedures, alongside increasing the risk of rejection of asylum seekers and potential refugees. This statement has also been elaborated by Borelli, Lindberg and Wyss which argue this suspicion inherently put on asylum seekers creates risks and limitations on their freedoms and human rights, as well as sustaining embedded discrimination which is based on a hierarchization in the EU migration and border system (2022, 1030-1031). In line with this statement, Yeung (2019, 9) emphasize how digital technologies in general can be problematic especially related to hierarchization and power asymmetries. In her view, can digital technologies be a powerful tool and fuel power asymmetries between the service providers and data subjects. She elaborates this by pointing to the fact that the ones providing digital services (data users and tech-companies) have access to personal sensitive data as well as detailed information of the users, whereas the users of these digital tools often do not understand or are not given adequate information of the data collection, access, purpose, as well as of their rights when sensitive data is collected from them. Thus, this information and access differences between the companies and involved third parties, and data subjects can create an embedded power asymmetry whereby these companies might operate in a vacuum where responsibility and accountability for example human rights and democratic principles, might not be fully monitored and adequately protected, according to Yeung (2019, 21-22). In her view, this has been seen in much of the digital tools deployed and utilized across the EU borders, wherein the data subjects (asylum seekers) often are not aware or informed about their rights regarding the use of their sensitive personal data (2019, 9).

4.2.1 Biometrics: Eurodac

There are several authors that have investigated the biometric technology, as well as the large-scale EU biometric databases in the EU, including Eurodac. There is both critics and defenders of biometric technologies and databases. These different biometrics inhabits both

weaknesses and strengths, wherein International Organization of Migration (IOM 2023) argues it can be a tool which can potentially empower migrants and asylum seekers, contribute to an enhanced and efficient migration and asylum management, increase the efficiency of authentication, providing good data accuracy, and prevent potential criminal and terrorists. Defenders, points to the advantages of enhanced national security, and how it potentially can catch potential criminals or terrorists and human traffickers, and increasing the state capacity. On the other hand, others argue that it has significant ethical, societal, and legal problems, as well as technical problems such as security breaches, poor data quality, biases and failing to enroll. Critics points to the disadvantages and risks with the safeguarding of human rights, and how it reproduces and reinforce racialized and gendered discrimination. Some critics also draw a comparison to biometric practices in the colonial time and how this can be traced on asylum seekers.

According to Ross (2007, 77) represents biometrics the "new silver bullet" which offers "solutions" to the "problems" in migration control, and ultimately, the biometrics used at the border can have notions of these embedded logics. He further argues that the large-scale set of biometric data allows for the creation of a detailed profile and identity through the biometric signature, which can increase the likelihood to detect criminals and terrorists (2007, 80). Haggerty and Ericson (2000, 606) argued that the extensive use of biometrics is at the core of the functioning of what they refer to as the "security assemblage". They argue this assemblage operates to put "[…] human bodies from their territorial settings and separating them into a series of discrete flows" (2000, 606). In Ferreira's view (2019, 57) do biometric technology represent an instrumental part in the tackling of irregular and illegal migrants, and should be viewed as an essential tool to ensure and protect the nation security in the EU and its member states. In the same line as the other defenders, Morozov (2013, 23) argues, that the development at the EU border has these recent years testified technosolutionism, seen through the increased expansion of several biometric databases and how these technologies has been important to protect the infrastructures and control terrorism within the EU.

Moreover, Madianou (2019, 585) argues these biometric systems should not just be viewed through a technological lens; hence, to grasp the understanding of biometric technology, it is necessary to view it as interconnected and influenced by the social, political, and economic landscape (Madianou 2019, 585). In contrast to the defenders of biometrics, Dijtelbloem, Meijer and Besters pointed out that biometric technologies "treat the human body as if it were an information storage device", where migrants and asylum seekers bodies in many instances

are being screened and captured by invasive biometrics to identify and target potential criminals or terrorists (2011, 13). A critic of the current deployment of biometrics at the EU border is, Sparke which in his view do biometrics prevent and limit the mobility of certain groups, which often are deemed on asylum seekers and migrants, whereas others are favoured such as for example businessmen men (Sparke 2006, 151). Stachowitsch and Sachseder (2019, 115-116) applies these notions to the contemporary biometric border practices in the EU, wherein the digital practices deployed and used at asylum seekers from the Global South can be compared to the same colonial practices. They note how both bodies, asylum seeker and colonized, are taken as a source of data extraction, and categorized groups in racialized and gendered stereotypies creating the "other". Magnet highlights the problems in biometrics, which she argues is embedded in the system of oppressions and colonialism whereby biometrics fail to work on specific groups related to the dimensions of ethnicity, race and gender (Magnet 2011, 7). Thus, as stated by Wendehorst and Duller (2021, 51) is systemic inequalities rooted in the technology, which ultimately influence both the use and outcomes of biometric technology and systems.

The biometric industry intensified after the incident of 9/11 and the "refugee crisis", which according to Madianou (2019, 583) represented a "realignment of national security". Although the contemporary biometrics use digital technology, it is important to note, according to Magnet (2011, 8) that biometrics is not a recent phenomenon - analog forms of biometric science have a long history and can be traced back to the nineteenth century. Thus, some authors argues that biometrics can be linked to colonialism and that the modern biometrics has several traits from colonial practices, pointing towards the embedded racialization and its connection to power and control (Pugliese 2007, 2010; Maguire 2012; Ajana 2012; Stachowitsch and Sachseder 2019). Hence, according to Ajana (2012, 852) which is critical to the deployment of biometrics, in her view the infrastructure of biometrics can be viewed as problematic as it is embedded in the discourse of race where, "whiteness" is still the universal and prevailing category. This is further stated by Pugliese (2007, 112), which points towards the empirical evidence wherein biometric technology has failed to capture and enrol certain bodies because of their race and gender. He further points to the evidence where biometric fingerprint scanners have failed to either capture or verify fingerprints of Asian because of their "faint fingerprints" or "fine skin". This has also been testified in the facial screening where people of colour or dark-skinned people are not equally captured compared to the rate of white men and women (Pugliese 2007, 112). In his view,

"whiteness" has determined much of the technical inputs and operationality of technologies, including biometrics (2007, 107). This has also been investigated by Madiega and Mildebrath (2021, 7), where they argue that there is wide empirical evidence of biases and discrimination against certain groups, especially towards racial groups. They highlighted how digital tools, especially facial recognition technologies, can produce gender and race biases and discrimination, and pointing to that these technologies have been found to be less accurate for dark skinned people and people of color then for white women and men. Buolamwini and Gebru (2018, 12) found similar traits of these of this algorithmic discrimination biases embedded on gender and race across EU. In addition, Madiega and Mildebrath, emphasized how false positives effects individuals that are not white disproportionally, which results to more suspicion and burden on these groups in criminal cases in their claim that their identity is not who they are identified as. Hence, this ultimately will, according to Madiega and Mildebrath, interfere with especially the right to non-discrimination and equality (2021, 7). Ajana argues the reason behind why these technologies cannot equally capture certain racial groups is that biometric technology is "calibrated on whiteness as a universal category" (2012, 865). She further clarifies this statement, and states these functional failures is a result of epitomes in the way in which biometrics industry is infrastructurally embedded in racial stereotypies put on certain groups or individuals, and how this can be compared to racialized and colonial discourses (2012, 864).

In Kindt's view (2013, 319-320) there is a high risk that biometric samples and biometric templates can reveal sensitive information regarding race and gender, and further states that fingerprints, and other biometrics are dependent on both the physical characteristics, and genotypic information. Thus, according to him, will facial-images and fingerprints reveal the racial and ethnic origin, and allow for ethnic classifications and divisions which is a highly problematic practices, however, it is "accepted" de visu (2013, 321). In line with this statement, Leslie argue the current expansion of biometric, especially within the field of security and migration are concerning as it can, according to him it can foster "[…] racialization to further entrench intolerable social injustices must remain a primary consideration in every potential project to use facial recognition technologies" (2020, 41). Kordzadeh and Ghasemaghaei (2022, 389) argue it is difficult to comprehensively investigate algorithmic bias in the organizational decision-making system, thus, in their view there is not enough knowledge about the connection between algorithms and humans in the shaping and development of biased outcomes. However, according to them, when an algorithm utilizes

characteristics or features that involves sensitive information, such as race and gender, as well as geographical locations, this can greatly increase the chances of bias (2022, 390). In their view, the chance for algorithmic bias and data discrimination can be more likely if it operates in a sphere which systemically targets racialized or gendered groups (2022, 391).

Various authors have investigated the large-scale database Eurodac, and its institutional set-up. There is an agreement in the literature that EU and its member states have been at the forefront of the development of digital border, wherein Eurodac has become one of the most important instruments and representation towards the increasing technological transformation in the EU. Moreover, when it comes to Eurodac, its initial purpose was to facilitate the application of the Dublin Regulation to determine the member state responsible for an application for international protection, however, Brouwer (2020, 76) argue this did not result in a more effective or solidary response to asylum, and the biometric system inhabits several questions. The Dublin system and regulation has been criticized for jeopardizing asylum seekers and refugees rights, where Garcés-Mascareñas (2015, 3) points to the structural risks of the asylum processes in different member states. She argue that there is an increased risk that the asylum processes and asylum claims are not always fair and efficient, because according to her, it neglects the consideration of potential family members being present in the member state, as well as the potential detention and long waiting time (2015, 1). Farraj argues that the data retention time in Eurodac which stands at ten years, is problematic as this can increase the likelihood of misusing and data-sharing to happen, as a result of the potential security breaches in the centrally based database Eurodac (2011, 933). Another risk that Farraj argue can be concerning concerning the long retention time, is that according to him, it can interfere with the right to seek asylum and international protection, which ultimately can result in pushing legitimate potential refugees into irregular migration. Hence, the formerly unsuccessful asylum seeker might need to apply for asylum with which will be legitimate for international protection in a later stage, but because of the formerly rejected asylum claim are stored in the database in ten years this increases the chance for an automatic rejection (Farraj 2011, 934). Moreover, Eurodac and its regulations taken or proposed regulation, have been questioned by various authors and the literature, where the majority are arguing that the initial purpose of Eurodac has extended and inhabits discriminatory characteristics. An issue that has been particularly highlighted is the increased interoperability between Eurodac and law enforcement. Roots pointed out this issue, and questioned why the EU and EC recognized that a small percentage of asylum seekers are involved in terrorism or crimes, thus, at the same

time they justified that law enforcement and Europol have access to Eurodac pointing towards the gravity of these crimes (2015, 116). She criticizes this justification, and the increased interoperability and argues this will result in a stronger suspicion and stigmatization on asylum seekers to be seen as potential terrorists or criminals (2015, 116). This will, according to Roots put asylum seekers in risk and increase the likelihood to of this group to be more profiled and face criminal investigation because law enforcement already has access to their data, which can be particularly critical if there are traces of racism in either the national law enforcement or of designated authorities and organizations (2015, 120). In line with Roots, several authors have criticized the interconnectedness of migration and crime in Eurodac, and how this contributes to make asylum seekers more prone to be targeted as a criminal or terrorist (Amoree 2006; Amelung 2021). This has also been highlighted by Tsianos and Kuster to be problematic, as the extended interoperability of Eurodac creates not only connections between migration and law enforcement, but also of counterterrorism and criminal law, which can put asylum seeker in a disadvantaged position (2016, 235-236).

Brouwer (2020, 78) further criticize the increased interoperability of Eurodac and law enforcement, which can produce several risks and implications. In her view, should migration and border control in EU should have a clear line and boundaries that both distinguish and separates it from law enforcement, as these should be considered as separate fields responsible for their own main objectives and tools. As these fields increasingly seem to converge in EU and its member states especially through the use of Eurodac, the necessity and legitimacy of the proportionality can thus be questioned (Brouwer 2020, 71). She argues that this increased interoperability can facilitate implications concerning the data protection and privacy of asylum seekers, as it can heighten the possibility for unlawful or poor data quality or sequency errors. Another critical issue is that the data subjects of Eurodac is that they often have do not know that it is used in other contexts, and that there is a lack of legal remedies to their deletion of data or the possibility to change the information and personal sensitive data, according to Brouwer (2020, 90). In addition, she refers to the discriminatory practices towards asylum seekers which is inherent in the the large-scale database Eurodac, where asylum seekers are more prone to be profiled and targeted as a result of cross-searches and profiling, and that this particular groups right to equality and non-discrimination often are neglected in the Eurodac practices (2020, 91-92). She further states the biometric system in the EU needs an improved regulations which emphasizes the asylum seekers rights (Brouwer 2020, 72).

5.0 Theoretical framework

This section will investigate the different theoretical approaches to digital technologies and border control. The chosen focus will be on the most utilized theories which applies to digital border practices, namely the theories of securitization, postcolonial feminist theory and Science and technology studies (STS). These theories has been included to contribute in the framing of the EU migration and asylum system, and digital border practices, focusing on Eurodac.

5.1 Securitization theory

In the scholarly debate surrounding migration and border control, the securitization theory has contributed to the discussion of these topics. This theory inhabits various perspectives and approaches, such as the constructivists, poststructuralists, and critical studies. It has been a popular theory, especially within the international relations field. Balzacq, Léonard and Ruzicka argues securitization theory seeks to explain the politics where a threat is established through a collective or common acceptance of the threat and resulting in policies being implemented as a response to this threat (2016, 495). The main argument of securitization theory is that security is a speech act as well as something that is being done, set up by a social and subjective constructions. Thus, it has strong connections to the social constructivism. According to Wæver (2004, 15) is securitization when something (object, group of people, issue or trends) is being designated and constructed as a threat through a common understanding, which ultimately justifies and legitimize the use of force and implementation of extraordinary measures to respond to the threat. Where, in his words "[…] security is the result of a move that takes politics beyond the established rules of the game and frames the issue as above normal politics" (2004, 15).

Securitization theory, within the field of migration has been applied especially within the EU. Buzan (2007, 91-92) argues that migration could be seen as a threat and a "boon" at a societal level and points to the survival of society where it can reshape nation-states and interfere with what the state stands for. The earliest academic work on securitization, did not account for or recognize the digital sphere, however, more recently increasing focus has been on the digital aspect of securitization. Hence, according to Bellanova, Jacobsen and Monsees, STS scholars see this as an opportunity to focus on non-humans in furthering their understanding regarding security (2020, 89). One central scholar within the securitization theory which approached the security aspect of technology is Balzacq. He emphasized the importance of viewing securitizing tools (digital tools) to examine EU's security politics and migration management

– then to solely depend on the classical notions of securitization theory (2008, 80). He highlights that policy instruments represents a technical solution to the public and argues that it is fundamentally a political tool (2008, 80). The securitizing tools, inherently puts something (object, group of people) as a threat. Hence, according to Balzacq (2008, 76), the EUs political stance and strong fight against terrorism and convergence with migration, will consequently reflect in the securitizing tools. Thus, this will according to him reflect in the processes taken with the threat and be translated into these digital tools and databases to be working outside of the common legal mechanisms in EU, as it is a necessary political measures or necessities (2008, 80). Balzacq (2019, 331) also notes, the securitization theory has fueled important discussion related to migration, but recognize at the same time, several weaknesses in the fundaments of securitization theory, which he argue have put implications on the development on the theory.

Several authors have criticized securitization theory. Some refers to the STS challenges or risks of the "silence-problem", "Eurocentrism", or how the colonial aspects are embedded in this theory. Wæver has been criticized for his justification of putting a certain group as a threat, which will allow for countermeasures to be taken without taking into consideration the general framework democracy operates within and results in a "vacuum" where the securitizing actors can operate in. Baele and Jalea (2023, 386) argue this theory has a strong fundament of Eurocentrism and has, as a result, struggled to engage or influence outside of the Western or European sphere as well as outside the field of international relations. Howell and Richter-Montpetit (2020, 17), takes a stronger stance and argues this theory inhabits traces of racism in its core fundaments and concepts regarding "normal politics" and security. Bertrand argue that securitization theory establishes a colonial complex, wherein some voices are not included in the analysis, or that they have been silenced outside the "West" (2018, 281). According to her (2018, 281), this stems from the reasoning where the "subaltern" or "inferior" do not have the possibility to securitize as they are continuously being excluded from security, and that they are the ones deemed as the ones being securitized and "spoken for". In addition, Howell and Richter-Montpetit (2020, 9) points to the limitation or weakness within the literature of the securitization theory within the field of migration and race, which primarily is focused on the speech of politicians which frames asylum seekers and migrants as a continuously threat. This then, according to them, inhabits traits of how the "normal order" or "normal politics" is being disrupted with racialized asylum seekers or migrants, and that it fails to investigate the inherent colonial aspects in the current EU border practices (2020, 6-7).

Additionally, even when securitization scholars try to investigate racial injustices or inequalities in their research or investigation, it continuously struggle or fails to implement the power politics within the security framing and how this affects racialized and gendered asylum (2020, 9).

5.2 Postcolonial feminist theory

Contrary to the securitization theory embracing of the constructivist or normative approach, postcolonial feminist theory, on the other hand, approach migration through an intersectional and power relations perspective. Howell and Richter-Montpetit (2020, 11) argues this theory involves investigating the choices of the histories and perspectives of the ones we "(de)value". In other words, this critically engage with the representations and stereotypies of particularly groups and individuals from the Global South. Thus, this theoretical approach highlights how constructions are often bound to a Western perspective, and how "whiteness" is deployed and framed as a universal perspective. Hence, postcolonial feminist theory emphasizes and aims at investigating the global power interaction and relations through both a transnational and historical approach (Kerner 2017, 847). The postcolonial feminist's goal is according to Mufti and Shobat to "[…] make sense of and ultimately change the oppressive power relations encoded in the name of race, nation and empire, as well as those of gender, class […] (1997, 2). As Gandhi (1998, 102) notes, this theory can contribute to a more comprehensive understanding of the societal underpinnings - as feminist theory seeks to encourage the postcolonial theory to critically engage with cultural nationalism, whereas postcolonial theory can include investigations of oppression across transnational dimensions.

According to Agathangelou and Turcotte (2010, 45) are the territorial boundaries marked and divided in the Global North and Global South, which represents histories of struggle, segregation, and contestation. In their view, are these constructions constant, wherein race and gender fuels inequalities of global power and justice (2010, 45). These social constructions of race and gender are both produced and regulated by the state as gender, sexuality, race and ethnicity are of increasingly more interests for the Western states (Agathangelou and Turcotte 2010, 48). Various scholars have analysed and referred to the current EU migration and border control through a postcolonial feminist approach, which particularly illustrates and emphasizes that migration, race and gender are deeply embedded and influenced through a "Western" perspective in its digital practices. According to the postcolonial feminist theory does data practices in the EU border and migration help to maintain as well as reinforce existing power asymmetries and inequalities in the dimensions of race and gender (Sassen

(2002, 370). Sassen further argues that digital technologies are closely interconnected along the lines of power systems, values, as well as cultures, where according to her, the gendering and racialization are embedded in these technologies as these are reproduced in the power systems and cultures, where inequality and hierarchy is inscribed and prescribed into both the input and outcome of the digital technologies (2002, 366). Hence, as noted by Spillers (2003, 210) the historical representations and constructions of race as well as race thinking has a long history in Europe, which is still highly visible and recognizable in the current narratives which circulates across the European member states and within the EUs decision-making. Thus, the mainstreaming of far-right rhetoric and antimigration sentiments can be one possible indicator of this. In the same line, Ahmed et al. emphasize how asylum seekers and the wider EU migration system are not only dependent on the power of border controls and border guards, but also on the designated biometrics utilized to categorize and distinguish between the ones that "belongs" and "not belongs" within the member states (2003, 3). Postcolonial feminist theory refers to four ways which characterize how the gendered and racialized representations inform processes related to EU's digital border and migration practices; through constructing the threat, and unknown "other", the spatial and power hierarchies, and in the vulnerability and humanitarianism (Sachseder, Stachowitsch and Binder 2022, 4675). By viewing the subjects as the masculinized "other" and "feminized vulnerable", or as feminized deserving and masculinized undeserving, the migrant and asylum seekers are deemed to these stereotypies. As a result, the increased digital tools at the EU border are interconnected to these representations, as EU and its member states justifies the use of more invasive and controlling tools, including biometrics to filtering out and targeting "risky" asylum seekers (2022, 4628).

Postcolonial feminist theory has at the same time received criticism, where criticism has been pointed out on its opposing thought of "de-historicizing" and naturalizing ethnicization or racial differences, which according to Kerner (2017, 854) fosters a fixed idea of especially the Global South. Thus, by viewing it something that are inscribed into inequalities and racial differences, this will according to her put these individuals in a close connection to vulnerability. Kerner further argue that the empirical analysis taken within the theory of postcolonial feminist theory neglect undertaking a deep investigation to other relevant elements, wherein she argue that both the theory and scholars within this field are deemed to only take into consideration "[…] left-leaning, critical, everyday knowledge of such boundaries; they presuppose that they are there" (Kerner 2017, 860).

5.3 Science and Technology Science (STS)

In human rights studies, the development and impact of science and technology has long been viewed through an STS perspective. STS is an interdisciplinary study which highlights and investigate the origins, impacts and trajectories of both science and technology in the society, and have contributed to in a deeper understanding as well as discussion of border and migration control. It takes a starkly different stance than technological determinism, which believes that technology works outside the political, social, and cultural contexts. Scholars within STS has pointed to the risk and implications of viewing technology as something that works outside the realm of social and cultural control, however, the idea that technology is a neutral and objective tool is still apparent and prevailing in the logics within the public discourse as well amongst tech-companies.. This can foster, according to proponents of STS, a sphere where digital tools can operate without accountability and responsibility, as well as outside the legal and human rights frameworks. STS have developed numerous concepts and approaches which contributes to understanding and recognition where data should be perceived as a "matter of concern" (Leese, Noori and Scheel 2022, 11). This theory, furthermore, highlights the importance of viewing technology as interconnected with the social and cultural dimensions, which are dependent on the interaction with human decision-making (2022, 12). Thus, STS entangles and engages with the interconnectedness between human actors, decision-making and data in digital tools through a comprehensive lens (2022, 13). Bellanova, Jacobsen and Monsees argues STS can help in in critically assessing the troubles outside of the politicized sphere, as it seeks to understand the rationale inherent in digital tools as well as its operationality within the socio-political landscape (2020, 93).

Leese, Noori and Scheel (2022, 19) argues STS theory can be useful to get a comprehensive understanding of the contemporary digital practices within EUs border and migration control, to get a greater understanding of the trajectories embedded in the data outcome, as well as the socio-technical landscape and infrastructure. Thus, empirically it can contribute to the examination of the operational practices and of the general social, political, and cultural factors determining the use of the digital EU border practices (2022, 7). They further emphasize and highlight how it is necessary to investigate the actors involved with setting the regulatory framework of migration, as well as the ones influencing or operating within the digital sphere which can include everything from border guards, companies, and data scientists. Hence, this demands a deep understanding of institutional, technical, and social

factors (2022, 19). Furthermore, in their view have digital technologies transformed the EU borders both in it political and institutionalized decision-making (2022, 7).

This theory has, at the same time, also received criticism, wherein Feenberg (2017, 3) argue STS is based on a critique of scientistic and technocratic assumptions, which he compare to much of the common understandings and underpinnings of the determinism and positivism attributed from the critical theory studies. This will then, in his view reflect inherent issues of the STS. Feenberg further argue that this theory fails to include the technical considerations or in other words, seem to neglect the technological influence as this as solely viewed as political tools (2017, 5). Other authors points to that STS are increasingly more politically determined, thus, that it is politically influenced as a theory, and that it fails to recognize how this political approach are bound to contribute to their analysis of technology and science (Brown 2015, 11). Brown criticize how STS deem science and technology as solely a political tool, as well as how it struggles to empirically engage with the cases where the politics are not intertwined or dependent in science and technology.

6.0 Empirical part: Case study of Eurodac and evidence from member states

This section will empirically engage with the impacts of Eurodac on asylum seekers rights. Data from several EU agencies, both from fundamental rights and data protection agencies, as well statistics provided by Eurostat, EU-Lisa, and EUAA will be utilized to give a comprehensive picture of Eurodac. The first sub-part will give a general overview of the findings of the current institutional system and set-up of Eurodac, EU-Lisa and its member states. The second sub-part are divided into two sections, which will provide the empirical data on the human rights implications and risks on the right to privacy and data protection, and equality and non-discrimination. Thus, it will examine both the existing Eurodac rules as well as those that are still under negotiation, namely the proposals of 2016 and 2020. This part aims at providing a general overview of the risks and implications of Eurodac in the EU, as this provides insights into the embedded risks which might impact the deployment and practice in each member state. At the same time this thesis recognizes that the EU member states have their own regulative framework and practices concerning the Eurodac operationalization, however, general trends are still viable and possible to investigate.

6.1 Eurodac, EU-Lisa and Member States

The Commission stated in 2009, in their impact assessment that Eurodac will be fully compliant with the CFR and that it would not interfere with the rights of asylum seekers, however, the full impact assessment was never fully finished (Roots 2015, 117). Simitis critically assessed EC's statement which clearly indicated that Eurodac would be in full compliance with CFR, however, several adjustments and regulations seemingly are in contrast or contravenes this stance (2010, 2001). Thus, several concerns have been pointed towards the impact of Eurodac on asylum seekers.

Moreover, the EU-wide database systems which includes Eurodac and EU-Lisa are regulated by EU secondary legislation, at the same time, these rules and legislations do not offer clear regulatory measures and principles on the use of these digital technologies and biometrics especially concerning the asylum processes and procedure. As a result of these seemingly weak and unclear regulatory frameworks, it has resulted in what one can consider as a "loophole" where member states are given both flexibility and prudence in operational practices of Eurodac which is comprised of their national asylum processes and procedures. Hence, this can foster various concerns on the legality aspect. Thus, the lack of a common regulatory framework can be said to be a disadvantage for asylum seekers' rights and

protection at the EU border, especially with the use of Eurodac (Ott and Testi 2021, 6). After the recast regulation of Eurodac was put into force, the responsibility is currently on each individual member state fingerprint' "experts" to monitor the hits and transmissions, which are set under the different EU member states national standards. Hence, whereas the automated comparison is EU-Lisa's responsibility, it has been reported by data protection agencies that these national standards and regulatory frameworks differs widely (Amelung 2021, 169). Furthermore, the EU member states also differ in their general obligations and compliance regarding the legal framework of migration and asylum in the EU, where there has been evidences of member states that do not protect and safeguard asylum seekers rights. The member states have also shown great differences in their operational practices of Eurodac, which has been indicated by differences in upholding and following the rules of data quality, providing information to the data subjects as well as on formal procedures of data deletion (Amelung 2021, 170). The next sub-parts will focus on the empirical findings on the risk and implications of Eurodac, focusing on the right to privacy and data protection, and equality and non-discrimination.

6.2 Human Rights Implications and Risks of Eurodac

6.2.1 The Right to Privacy and Data Protection

Reliability and security risks

In 2022, there was approximately 1,5 million transmitted fingerprinting data set to Eurodac, which represented a large increase since 2021 (73 percent) and 2019 (62 percent), wherein the hits returned was 20 percent higher compared to 2021 (EU-Lisa 2023, 3). Thus, this large increase can be because of the COVID-19 pandemic. Moreover, the EU member states are obligated to ensure that the quality and accuracy of the biometrics follows the set standards by EU-Lisa and the regulation. This is monitored by EU-Lisa by an automatic controller, which automatically controls and quality-check the biometric fingerprints. Hence, when the quality standards for Eurodac are not met adequately these are considered as so-called "rejected data sets", which automatically are returned to the member states. Data sets can be rejected because of low quality, faint fingerprints or through an error in the sequence check (FRA 2018, 88). These fingerprints can still be stored in the national database, but not in EU-Lisa (FRA 2018, 88). There is still no indicator on how the national database ensures that these are deleted from the national database. According to statistic provided by EU-Lisa was

approximately close to 40,000 data sets rejected as a result of low quality or sequence error (EU-Lisa 2023, 13). As data quality are the main responsibility of national front-line officers, which can include different various actors, such as immigration control, border guards, and police in each of the individual member state, this can increase the likelihood of mistakes or wrongfully taken fingerprints, as well as the registration of not correct age or name of the asylum seeker (Oliveira 2019, 133). This can be critical as this can affect the asylum application. According to various FRA reports (2017; 2018; 2022) which investigated the data quality and accuracy of the EU member states, the agency found evidence where several of the countries did not have adequate measures which resulted in poor data quality in Eurodac (FRA 2017, 141). This can be critical for asylum seekers, as it might increase the likelihood of asylum withdrawals. Hence, as the data protection agency ESCG stated, there needs to be an investigation of the data quality of Eurodac in the member states, and on ensuring that the fingerprints that are rejected are re-taken, as well investigating the consequences of the rejected data sets' impact on asylum claims (ESCG 2019, 7). There has not been, till this date, any investigation on this potential issue, however, EDPS has consequently demanded more transparency in these activities. At the same time, one trend that can be a potential indicator on the presence of withdrawn applications because of rejected datasets can be to look at the number of withdrawn asylum applications. According to statistics provided by EUAA there were approximately 70,000 applications withdrawn in the member states in 2021. The number from 2021 almost doubled since 2020 (EUAA 2023a). This trend continued across the EU member states wherein 2022 saw a doubled increase in withdrawn asylum applications which was approximately 140,000 (EUAA 2023b, 147). Most of the withdrawals were men and minors, which consisted mainly of Afghan, Syrian, Tunisian, Pakistani, and Palestinian people (EUAA 2023a). Thus, as a result of this increasing trend of withdrawn asylum applications, the data protection agency EDPS, emphasized in this year's report that EU-Lisa and the member states must employ regulations and measurements regarding data quality and accuracy, and highlighted the need to address bias based on gender and race (EDPS 2023, 58).

Moreover, as biometrics, especially fingerprints, seldom is questioned in its accuracy and is seen as a reliable biometric technology, it is difficult for asylum seekers and data subjects to challenge both the outcomes and information produced in Eurodac (Bredström, Krifors and Mešić 2022, 78). This fosters several issues, especially with the inherent power asymmetries between the collector and asylum seeker. Moreover, as Eurodac is based on a centrally stored database, it can be more prone to security risks and hacking attacks then a locally stored

database, and can risk that sensitive personal data of asylum seekers can be more accessible for persons with intentions to extract information on these specific groups (Kindt 2013, 359).

Interoperability and law enforcement: lack of consent and information

Concerning the increased interoperability taking place in Eurodac, this has raised concerns especially on data protection and privacy, but also on equality and discrimination. The latter will be discussed in section 6.2.2. The database was originally set up as a tool for the handling the application of the Dublin Convention but changed drastically in its aims and purpose. This extended mandate has indicated that it is increasingly used as a political tool, aiming at increase its profiling and surveillance mechanisms (Kindt 2013, 387). The initial purpose of Eurodac's mandate has been extended through the 2013, 2016, 2018 (proposed) regulations, which according to Brouwer, has resulted in an interconnectedness between the fields of migration and law enforcement (2020, 71). There has been a "function creep" through the increased interoperability, where the stored data taken for the purpose of Eurodac has been deployed and accessed in other fields, such as for objectives of Europol and national law enforcement (Brouwer 2020, 72). Thus, once the biometric fingerprinting of the asylum seeker have been registered and processed through the central database in Eurodac, it can be accessed by Europol, criminal law, national law enforcement as well as other designated authorities and organization, where data subjects do not need to be informed about this access for other uses (Vavoula 2020, 15). When biometric templates or signatures of asylum seekers are stored in the Eurodac database, and accessed for other purposes, it will automate personal sensitive data of the data subjects name, race and gender, which is allowed under EUs national security policies (Kindt 2013, 354-355). According to statistic provided by EU-Lisa on the list of designated authorities which had access to Eurodac in 2022, there was clear differences in the member states. Some member states, although few had two designated authorities with access to Eurodac (Norway), the majority had numbers ranging from 40 to 350 (EU-Lisa 2022c). This was an increased from the numbers in 2020, where the designated authorities also varied where some had maximum four authorities had access to Eurodac (Greece and Austria), whereas others (France, Italy, Belgium) had large number of organizations and authorities with access to Eurodac ranging from fifty to 200 organizations (Brouwer 2020, 78).

In addition, asylum seekers often are seemingly unaware or are not given proper information about their rights when sensitive personal data is collected from them in Eurodac. Several indicators have shown traces that they are unaware of the right to question, have access,

chance, delete and rectify the data collected in Eurodac (Roots 2015, 117). Thus, according to FRA it is important that the front-liners are providing proper information and transparency of both the procedures and processes when they are taking fingerprinting of asylum seekers, as it might can increase the likelihood of asylum seekers to be more willing to get their fingerprints taken (FRA 2018, 41). Many asylum seekers are in addition not given adequate information by the designated member states authorities about their rights and available remedies when it comes to Eurodac, such as for example the duration of their stored personal sensitive data, as reported by the FRA report (2018, 29). Several asylum seekers in the FRA report, especially the ones in Greece indicated that they did not receive any explanations on the purpose of Eurodac, or only informed that it was taken for security measures (FRA 2018, 34-35). This has also been criticized and reported to be a continuing trend amongst several member states as indicated by both the ESCG and EDPS. A report provided by ESCG, found evidence that the majority of member states would grant the right to deletion, however, this was only in exceptional circumstances where it was unlawfully taken and processed. The majority of the member states, at the same time, did not refer to any specific formal procedure currently in place to ensure this right, while other member states stated there was no formal procedure currently in place, whereas others stated that they had never received a request for deletion of Eurodac data (ESCG 2019, 10). In addition, ESCG has criticized Frontex' lack of protection of the data protection and privacy of asylum seekers. Frontex, which in many instances are the front-liners in several member states, has especially been criticized for its internally structure which seemingly lacks clear elements of data protection principles and rules. In addition, several concerns have been on the lack of information provided by the Frontex guards in the purpose and collection of personal data in Eurodac (ESCG 2023, 56).

Data retention

The data retention in Eurodac is set at a period of ten years, which means that the personal data of asylum seekers will be stored and accessible in the central database throughout this period. This is drastically different to the data retention time of an irregular or illegal border crosser, which store their fingerprint only eighteen months (Vavoula 2022). Moreover, the fingerprints that has been registered and collected from asylum seekers trying to get international protection, are neither deleted or blocked but will remain accessible for law enforcement and the immigration system, and "marked" (Vavoula 2022). As stated by the various European Courts regarding data retention time, the retention period should be and must be as short as possible to ensure that this do not interfere with privacy and data

protection rules (Vavoula 2020, 18). Thus, the data retention time of ten years are currently fixed, and there has been no implementations or regulations that have sought to lower this long retention period. Another weakness regarding the data retention, highlighted by the ESCG is also that the member states often do not provide sufficient information on how the deletion process of the sensitive personal information in Eurodac functions, and the data protection agency demanded a closer investigation on the procedures of the national member states deletion of data (ESCG 2020, 2).

6.2.2 The Right to Equality and Non-Discrimination

Generalization

Eurodac has been criticized to have an embedded and inherent risk of generalizing asylum seekers and irregular migrants. Thus, by registering asylum seekers in a system which applies the same generalization as of an irregular migrant, its initial categorization and registering has been criticized for weakening its protection of asylum seekers (Ajana 2013, 583). As Eurodac's categorization ranges and covers asylum seekers (category 1 (CAT1), irregular border crosser (CAT2), illegally found in member state (CAT 3), searches by member state law enforcement (CAT4), searches by Europol (CAT5), there is a weak distinction between the legality and illegality, thus, by including asylum seekers in the same framework as these other categories it can fuel generalization (EU-Lisa 2023, 8). Hence, asylum seekers should not be treated in the same way as irregular migration, as the asylum seekers are potential refugees and are protected under legal frameworks ensuring international protection as well as refugee protection and status (Vavoula 2020, 6) Moreover, the seemingly undifferentiated treatment of asylum seekers at the EU-borders seeking international protection and irregular migrants can neglect the potential vulnerability of this group, and foster several negative risks which can compromise safeguard and protection of asylum seekers, according to Vavoula (2020, 16).

Criminalization

Another risk and implication of Eurodac's impact on asylum seekers right to equality and non-discrimination, is the one of criminalization. When it comes to criminalization, the Eurodac' s institutional operationalization is inherently of a nature which opens the possibility to give access as well as registering sensitive personal information of a group (Brouwer 2002, 231). Thus, it can fuel several risks as the member states seemingly can be considered to applying lower stands for respecting asylum seekers rights (2002, 243). The increased

interoperability between law enforcement and migration are a matter of concern, as individuals are often not aware of their data being accessed across different contexts, as mentioned in the FRA report mentioned in sub-section above. Moreover, this increased accessibility fuels an automatization of asylum seekers sensitive data concerning name, race or gender – which can ultimately increase the likelihood for discrimination and profiling (Kindt 2013, 354-355). Vavoula (2020) found that asylum seekers are increasingly more and disproportionally affected concerning convictions and persecutions compared to an EU-citizen, because there already exists extensive personal sensitive information on asylum seekers in Eurodac, and points to how there is no similar system of EU-citizens. Statistics provided by Eurostat, reported that third-country nationals subjected to law enforcement in the EU in 2022 was mainly consisting of Syrian (16.5 percent) Afghan (10.7 percent) and Moroccan (5.6 percent) (EU 2023, 22). In addition, statistic provided by EU-Lisa reported in 2022 that there was an increase of data transmitted with CAT4 AND 5, which represented a 230 percent increase compared to 2021 (EU-Lisa 2023, 8). Another point worth noting, is the evidence of an increasing number of searches conducted in Eurodac which can illustrate the increased criminalization of asylum seekers. EU-Lisa's monitoring instrument which reports the access of law enforcement when they do searches, found that 1,544 search were performed in 2022. Thus, of the 30 searches done in CAT4, there were at the same time 26 hits reported in CAT1 (EU-Lisa 2023, 9). The data protection agency, EDPS, consequently, has raised concerns on the seemingly interchangeable convergence between terrorism and internal security seen in the trends of the increased access and searches done by law enforcement and other designated authorities in the Eurodac database. This can according to them, blur essential boundaries between the framework of the EU border and migration control and terrorism, as well as foster increased suspicion where asylum seekers are seen as potential terrorists (EDPS 2017, 9).

Another aspect relating to the risk and implication of criminalization, is that fingerprinting often are a practice which is used in criminal matters, and asylum seekers can experience these tools as stigmatizing as they have not done anything wrong by seeking international protection, and fostering the feeling of being criminalized (Kaurin 2019, 12). Asylum seekers often feel that the practices at the EU borders can be stigmatizing and that they are not equally protected, hence as Addissu, which is is living without immigration status in Brussels stated, "We are Black and border guards hate us. Their computers hate us too" (Molnar 2020, 1). Another risk is that the proposed regulation makes it possible and allowing to store more

sensitive data and information on the identity of the asylum seekers, such as nationality, name, date of birth and gender. Facial screening biometric will in addition be included, as well as lowering the current age which is set at fourteen to six years (EDPS 2023, 58). This can increase the likelihood of targeting and profiling certain racialized and gendered groups, leading to unlawful and excessive profiling and screening of asylum seekers. By lowering the age to six years, it clearly illustrates how asylum seekers are subjected to different and discriminatory practices. Thus, in 2021, 31 human rights organizations, including Amnesty International, European Council on Refugees and Exiles (ECRE), International European Digital Rights (EDRI), and Statewatch argued the proposed regulation have not been adequately examined regarding the human rights implications and argue the European Commission has seemingly neglected the proportionality and necessity tests (Access Now 2021).

Self-harm and use of force

The proposed regulation of Eurodac allow sanctions for the asylum seekers that reject or not comply with the fingerprinting procedure, which will be decided within the individual member states, according to the data protection agency (EDPS 2020, 6). Hence, this can increase the chance to put them in danger for self-harm, which already has been widely recognized by several human rights organizations and EU agencies (FRA 2018, 50). Several member states and human rights organization have reported that asylum seekers have resorted to self-harm, by using acid, mutilation, or other tools to destroy their fingerprint to not be registered in the Eurodac database (FRA 2018, 50). The practices of resistance and self-harm because of the Dublin and Eurodac system, can be a reflection on how Eurodac fuels increased dangers and disadvantages on asylum seekers. Another concerning risk related to the proposed regulation that will allowing sanctions under the national law framework, is that it creates a gap where the member states can decide what measures that are allowed when asylum seekers refuse to take fingerprints. Thus, this might exacerbate the likelihood where the use of force is being more regularly practiced. Already, there has been reported several incidents where the front-liners and authorities have used force on asylum seekers to take fingerprints for Eurodac (FRA 2018, 53).

Table 1. Overview of risks and implications of Eurodac on the Right to Privacy and Data Protection, and Equality and non-discrimination

Asylum seekers	Legal rights	Trends in Risks and implications of Eurodac
Right to privacy and data protection	International: Article 17 ICCPR, Article 12 UDHR. Regional: Articles 8 and 7 CFR. Article 8 ECHR .	1.Reliability and security risks: Lack of data quality and accuracy. 40,000 rejected data sets. 70,000 withdrawn asylum applications in 2021, 140,000 in 2022: Afghan, Syrian, Tunisian, Palestinian and Pakistani men and minors. Security breaches and hack attacks. 2.Interoperability and law enforcement: lack of consent and information: Designated authorities with access to Eurodac ranging from 4 to 200 (2020), to 40 to 350 (2022) in member states. Lack of consent of access to law enforcement. Automated personal sensitive data. Unawareness of right to question, have access, correct, block, and rectify the data collected in Eurodac. 3. Data retention Long retention time (10 years) Increase chances of misuse and sharing. Lack of information on deletion of data in member states.

Right to equality and non-discrimination	<u>International:</u> Article 2 UDHR ICCPR and ICESCR <u>European:</u> Articles 20 and 21 CFR Articles 2 TEU, 10 TFEU.	<u>1. Generalization</u> Generalization of asylum seekers and irregular and illegal migrants by CAT1-CAT5. <u>2. Criminalization</u> Asylum seekers subjected to law enforcement mainly Syrian (16.5 percent) Afghan (10.7 percent) and Moroccan (5.6 percent). 230 percent increase of CAT4 and 5 in 2022 from 2021. 1,544 searches performed by law enforcement, 30 in CAT4, 26 hits in CAT1. Including more sensitive data, nationality, name, date of birth and gender (proposed regulation). Include facial screening biometric (proposed regulation). Lower the age from 14 to six (proposed regulation). <u>3. Self-harm and use of force</u> Allow sanctions (proposed regulation). Self-harm to avoid fingerprints. Use of force.

7.0 Discussion – Analysis and Implications of the findings

Contextual overview of the EU digital practices

This thesis has aimed to investigate the impact of the large-scale database Eurodac on asylum seekers right to privacy, data protection, equality and non-discrimination. This has done through a structural investigation with the different trajectories of the complexity between the socio-technical realm these are operating within. The EU migration and border control, as well as digital technologies and AI, can be considered at the current time as a mine field across Europe and within the political landscape. Thus, a deep dive into the different political and social trajectories has been included to give a general picture of the current situation at the EU border, wherein investigations of different literature grasping explaining factors has shown both similarities and differences. Some pointing to the securitization as an explanatory force behind the current "Digital Fortress Europe", others approaching it from a power asymmetry perspective. Although several criticisms and weaknesses have been attributed to these different theories, they have fuelled important awareness and understanding of the complexity between technology and migration management in the EU.

Various perspectives on EU migration and border management have been explored, to examine the socio-technical landscape these digital technologies operate within. Some arguing that securitization has been the logic across the European countries since the "refugee crisis" of 2015. Although there is still not possible to talk about a coherent migration policy system in EU, as argued by Soysüren and Nedelcu, thus, several aspects and approaches has been characterizing the current institutionalization as well as the rationales across EU and its member states. Although member states differ in their approach to migration, there has been a wide agreement in the literature as well through these empirical findings that can indicate that the current system is been understood through a framework of crisis particularly since the 2015 "refugee crisis". The increased securitization and militarization efforts of the migration system has remained a strong denominator chich has prevailed both the political system and political forces across the member states. An exception in the literature, namely Boswell, pointed to how there rather has been an absence of securitization characterizing the EU migration system – highlighting how there has been no evidence of linking migration and terrorism neither the public and political discourse, and rather efforts towards countering terrorism not to control migration. Boswell pointed in addition to the robustness of organizations to not be influenced by securitization rationales in public discourse, and that migration practices are not practicing colonizing efforts. It is worth nothing that Boswell's

article was written before the “refugee crisis”, however, by stating that the political discourse and institutionalization has not been influenced by securitization efforts seemingly is in contrast with the current EU migration and asylum systems across the European countries at this time. Thus, Boswell arguing that the robustness of organizations will not embrace demands of securitization by the public discourse can also be questioned, as we have witnessed with the mainstreaming of far-right rhetoric to critically influence political decision-making especially regarding in antimigration sentiments across the various EU member states.

The crisis narrative and securitization efforts in the EU migration management has been approached from different perspectives, some embracing the logic of securitization, viewing it solely as an objective urgency in the scope and form through a threat perspective, others approaching it from pointing to the ideologies and normative assumptions, as well through a transnational intersectional perspective. The securitization theory has been a particularly popular theory especially within the field of international relations, which has aimed at investigation the underlying trajectories of migration. Wæver, pointed to how the construction of an issue or group, through a common understanding of viewing it as a threat legitimizes the use of extraordinary measures and force. Hence, by embracing and legitimizing the efforts taken as a response to threats outside of what he calls “normal politics” have several issues particularly for asylum seekers. This theory can be considered to apply to the current securitization logics in the EU migration system, where asylum seekers are often deemed as a threat, and faced with invasive digital countermeasures which is “justified” in the name of national security. Buzan emphasized how migration can in fact be seen as a threat and highlighted that it challenges not just the “survival” of the society, but also how it reshapes the EU member states national structure. These logics can be considered to prevail in the current EU migration systems, however, are at the same highly problematic statements, as it warmly embraces the idea that EU and its member states are allowed and “justified” to apply countermeasures to what they commonly see as a threat, which especially these last years have in the public and political discourse been migration and asylum seekers. Legitimizing and justifying policies and decision-making surrounding migration solely because of the potential “threats”, ultimately puts asylum seekers rights at risk as the member states are allowed to operate outside the democratically set frameworks and human rights principles. This removes the principles of accountability and responsibility. Regarding Eurodac, some characteristics can be found within this logic, thus for example through the increased

interoperability, and of the proposed regulation which will allow facial and fingerprint biometrics to be utilized on asylum seekers from the age of six, in the name of "national security" to prevent, detect and catch terrorists and criminals. Wherein asylum seekers are deemed as a security threat based on racialized and gendered stereotypies.

At the same time, this theory weakly addresses the underlying trajectories which has seemed to be of an even greater importance of understanding the current socio-technical EU migration system. The postcolonial feminist theory has contributed to the discussion regarding what seemingly has been clearer indictor of the EU migration system. As this theory critically engage with transnational and intersectional perspectives on colonialism and race and gender, this has seemed to testify the technical fundaments of Eurodac and the empirical evidence in a greater extent. There seems like the crisis narrative has been fuelled by other forces than the objective scope and form of migration, or through a threat perspective. Thus, related to this point, as stated by Sachsedera, Stachowitscha and Binder, there seems like the crisis labelling is not a response to the scope and form of migration, but rather of other ideological and normative value judgements. Which they pointed to by looking at the initial response taken with refugees fleeing from Ukraine within the EU and its member states, which was never labelled as a crisis in the political and public discourse. In comparison to for example the "refugee crisis" of 2015 where asylum seekers from the Global South was fleeing from war and persecution, this was immediately labelled as a crisis within the EU member states. This can also be a possible indicator on the countermeasures taken at the EU border, especially in Eurodac, which might reveal racialized and gendered power hierarchies and inequalities within the EU migrations decision-making and policies as stated by Hoijtink and Muehlenhoff.

There has been a wide agreement in the literature that the crisis narrative has been an explanatory factor for the development of the technological fixes to "manage" migration, thus, creating the "Digital Fortress Europe". Increased extensive and invasive digital technologies has been deployed to control EU migration and has been "justified" and "legitimate" as these operates within the logic of securitization to ensuring national security and detect threats. Especially biometrics, have become to represent an obligatory passage point as noted by Latour. These biometrics tools have been understood as inherently neutral and objective from the proponents of technological determinists. This thesis argues according to the empirical findings and indictors posed from the literature review, that Dafoe arguments claiming that technology are operating outside social and political contexts, stands in contrast

to how these in fact are highly connected to human interference. Thus, that these tools inherently are not possible to reproduce the existing inequalities and biases, seem to be contradictory to the interference of data users and companies in biometric technologies and its outcomes. Biometrics, hence, should be understood as interconnected in every stage of the designing and utilization of both algorithms and data. Leese, Noori and Scheel undertaking the STS perspective, highlighted how the decision-making and policies by both the data users and companies, as well other political actors are guiding the practices of biometrics at the EU border. The postcolonial feminist theory, also criticize the technological determinism theory, but approaches it from a different perspective than STS and securitization theory, and highlighted the importance of understanding the underlying power asymmetries and inequalities that are inscribed in technologies along the dimensions of race and gender. As the postcolonial feminist theory indicated, racialized and gendered stereotypies and inequalities are deeply embedded in the current EU digital practices, as it affects both the functioning, designing and purpose. The securitization theory, on the other hand, viewed the EU digital tools and practices solely as a political instrument which fosters technical solutions to the public, hence putting a certain issue or group as a commonly understood threat for the purpose of security measures. Thus, this thesis argues that both postcolonial feminist theory, the logic of securitization and STS contributes to the understanding of the socio-technical aspects of Eurodac.

The two following sub-parts will critically engage with the risks and implications of Eurodac on asylum seekers rights, focusing on specific trends seen in the member states use of Eurodac.

7.1 Right to privacy and data protection

When it comes to the risks and implications on Eurodac regarding privacy and data protection, concerns and weaknesses has been visible on especially the reliability and security risks, interoperability and law enforcement, and data retention. Firstly, regarding the reliability and security risks, the reliability and security risks has been an issue of both Eurodac and its member states. As Eurodac is a centrally stored database, it can be more prone to security risks and attacks, than a locally stored database. This increased risk of security breaches can result in sensitive personal data of the asylum seekers to be potentially accessible for outside groups that might have an interest in these data. Thus, asylum seekers' right to privacy and data protection can be at risk, and potentially be interfering with especially Article 8(2) of the CFR. This can potentially illustrate how the logic of

securitization have played a role in this design and technical set-up, as it justifies the use of using tools that operate outside of the "normal politics", justifying that sensitive personal data of asylum seekers can be centrally stored, might indicate a lack of safeguards to asylum seekers privacy and data protection.

Moreover, regarding the reliability and poor data quality, the statistic provided by EU-Lisa on rejected datasets in 2022, as a result of either poor data quality or sequence error, were approximately 40,000. Although this number can be considered as relatively low, as the transmitted data in Eurodac was approximately 1,5 million in 2022, poor data quality which results in a rejected dataset can be a potential risk for asylum seekers. Thus, as Eurodac is an important tool which can influence as well as determine the asylum seekers claim for international protection and potential refugee status, the member states must ensure to uphold the data accuracy. Hence, the presence of rejected datasets in the EU might be increasingly more critical if the ones responsible for taking the fingerprinting in the member states either systematically try to provide poor data quality on certain groups, or avoids to re-take the fingerprints, or withdraw asylum applications. Thus, an institutional issue is that the rejected data set is not automatically deleted from the national system, but only for EU-Lisa.

As emphasized by the data protection agency, ESCG, there is still no formal procedure in the EU which investigates this potential issue and has criticized Eurodac and the member states lack of transparency on this issue. At the same time, a potential indicator illustrating this potential trend, is the increasing trend of more withdrawn asylum applications. Hence, withdrawn asylum applications were estimated to around 70,000 in 2021, but doubled from the numbers of 2020, where 140,000 asylum application were withdrawn in the EU member states. An interesting finding regarding these numbers is that most of the withdrawals were affecting men and minors, consisting mainly of Afghan, Syrian, Pakistani, Palestinian, and Tunisian. Hence, mainly asylum seekers from the Global South. In line with this, EDPS demanded stronger data quality and accuracy from EU-Lisa and its member states, as well as a need to address algorithmic bias on race and gender within the operationalization of Eurodac. Thus, one might question if this can indicate that some groups are more prone to get their asylum application withdrawn, and that poor data quality and accuracy in rejected datasets is fuelled by selective forces excluding certain racialized and gendered groups. Thus, as the withdrawn asylum applications consisted of mainly individuals from the Global South, which were mainly men and minors, this can reflect the idea of the "undeserving masculine". This might lead to the assumption that Eurodac, might have traces of power asymmetries and

inequalities, and discrimination. Thus, this potentially can be considered as an implication on Article 8 of the CFR, as well as the non-discrimination the Articles 20 and 21 of the CFR.

Another potential risk is within the reliability and security breaches, is that fingerprints and facial image often are seen as a reliable biometric tool, however, evidence has shown these tools are inherently based on a "whiteness" and "Western" universal category – where white people have a higher rate of accuracy rate, whereas people of color or are dark-skinned are prone to be registered to a wrong identity or not easily recognized, as Madiega and Mildebrath argued. This has also been found to apply for fingerprinting where evidence has illustrated that certain groups, especially Asians, elderly and children are not being easily registered. Thus, as biometrics are perceived as a reliable source and highly accurate, this ultimately can put the asylum seeker at a disadvantage to challenge the outcomes in Eurodac. Ultimately, this can be considered as a relevant risk and implication which can interfere with data protection in Article 8 of the CFR as well as non-discrimination in Articles 20 and 21 of the CFR.

Secondly, regarding the right to privacy and data protection, is the extended interoperability of Eurodac. Law enforcement and Europol are allowed to both access and do searches in Eurodac for national security purposes, without the consent as well as informing the asylum seekers. The member states also portrayed differences in the number of designated authorities with access to the database, wherein it was ranging from 4 to 200 in 2020 and increased to 40 to 350 in 2022. This allows and justifies that personal sensitive information and data which can include detailed information on the name, race, nationality, and gender to be automated and accessible to several different actors, for the greater purpose of security. This has resulted in fostering the issue of a seemingly strong convergence of migration and terrorism. Much in the line with the logic of securitization, EU and its member states have allowed Eurodac to extend its mandate where Eurodac information are accessible for Europol and national law enforcement - because of EU and its member states fight against terrorism and a threat. In addition, a trend in the member states has been that asylum seekers haven not gotten sufficient information on their right to the data collection taking with Eurodac, and seemingly are unaware that they can delete, correct as well as block the data collected about them. This trend where information has not been given to asylum seekers has been criticized by ESCG and EDPS, and demands that there are more transparency in these processes. which demands an increased transparency and improved formal procedures of information. Frontex, which

often are front-liners was in addition criticized for not ensuring that their data collection and data protection practices, as well as not providing sufficient information.

Thirdly, the last risk and implication regarding the right to privacy and data protection, is the data retention time. The current data retention time in Eurodac, which is set at a period of ten years can be considered to have an implication on asylum seekers right to privacy and data protection. Hence, storing sensitive personal data of vulnerable asylum seekers for this long period, can increase the chances of this to be either misused or shared, as Farraj argued. An interesting empirical finding is that compared to irregular migrants, the data retention time is eighteen months. This thus can portray differences in treatment, where the irregular border crosser is more protected than the asylum seekers when it comes to data protection and privacy. As noted by Vavoula the asylum seekers that have gotten an accept asylum claim and international protection, their data will not be deleted, but "marked" which makes it possible for law enforcement to continuously do searches and cross-checks on asylum seekers during these three years. Thus, increasing the likelihood for this group to be more prone for profiling and persecution. This might indicate that asylum seekers are subjected to unfair treatment and might be increasingly more subjected based on their based their race or gender. Another issue with this long retention time is that it can interfere with the right to asylum, which Farraj argued increased the chances of an automatically rejection of a later asylum claim, where the individual might have legitimate claims for seeking asylum and refugee protection. This can put asylum seekers in a disproportionately disadvantages, as they may resort to irregular migration. Another risk and implication regarding the data retention, is that the data protection agency reported that there was no formal procedure that ensure or monitor the deletion of data.

7.2 Right to equality and non-discrimination

Regarding the right to equality and non-discrimination, various risks and implications has been apparent in Eurodac and the member states. Generalization, criminalization, and self-harm have especially been visible through both the literature and empirical evidence.
Firstly, regarding the risk and implications of generalization, there seems like there is a weak distinction between asylum seekers and irregular or illegal migrants in the Eurodac categorizing system (CAT1-CAT5). Hence, the 5 categories include asylum seekers within the same framework as of the ones that are perceived as illegal, which can be considered as weakly distinguishing the asylum seeker from illegal fostering ideas where asylum seekers are

implicitly seen as a potential threat, illegal and criminal. This can reflect the securitizing logics taken, as it allows to put these "threats", which here is both asylum seekers and irregular or illegal migrants, into a system that do not carefully distinguish them. In addition, the racialized and gendered asymmetries and hierarchies can be reflected in the generalization of asylum seekers, where they are deemed as a "unknown", "unpredictable", and "security threat". Thus, this can interfere with asylum seekers right to non-discrimination in Article 21 of the CFR.

Secondly, the increased profiling and targeting of asylum seekers through the Eurodac database can reinforce the criminalization of asylum seekers, as this group are often the main targets of law enforcement. Eurodac is set up by a database which register, stores and accesses sensitive personal information of asylum seekers, thus, the increased interoperability where law enforcement and Europol are allowed to access information about asylum seekers fuels the likelihood for this group to be subjected to extensive surveillance and profiling. As Vavoula noted, as there exists no similar database of EU-citizens, asylum seekers are more likely to experience persecutions and criminal offences, as a result of the increased access of Eurodac of both national law enforcement and Europol. This has been indicated and illustrated by the statistic and evidences provided by EU-Lisa, wherein 2022 represented the largest increase of traffic on CAT4 and CAT5 (230 percent from 2021). There were in addition done 1,550 searches and cross checks of CAT4 (30 searches) and 26 hits in CAT1. Thus, this indicates and is a evidence of an increasing number of searches conducted in Eurodac which has illustrated the increased criminalization of asylum seekers. These concerns have consequently been raised by EDPS, which clearly stated that the increased convergence between migration and terrorism, as well as the interchangeableness between asylum seekers and terrorists have been concerning of the expansion of Eurodac in law enforcement.

As the statistic provided by Eurostat illustrated, Syrian, Afghan and Moroccan, are often more subjected to law enforcement in the EU member states. This can be a concerning trend as the main groups targeted for law enforcement in the EU member states are mostly asylum seekers from the Global South, which mainly consisted of Syrian, Afghan and Moroccan according to the statistic provided by Eurostat. Thus, this can be an indicator of both the securitization logic, where asylum seekers are deemed as a potential "threat", and allow the cross-checks and searches by law enforcement for the greater security in the EU member states. The racialized and gendered inequalities can also be considered to be affecting this specific aspect of Eurodac, as the EU-citizens, or the Global North, do not experience similar uses of

biometrics or sensitive data to be easily accessible for law enforcement. As well the indicator of individuals from the Global South are more targeted by law enforcement, can be a possible indicator of inequality and discrimination. Thus, also reflecting that Eurodac can contribute in the algorithmic and data discrimination of along the lines of gendered and racialized lines. Hence, they are seen as a potential criminals and terrorists. Hence, this can be considered to interfere with the Articles 8 of the CFR as well as Article 20 and 21. The expansion of Eurodac can as a result be questioned in its necessity as well as proportionality.

Another implication and risk related to criminalization is that the proposed regulation allows for more sensitive information to be accessible in Eurodac, which will potentially include race, gender, and ethnicity. This can ultimately lead to more racialized and gendered inequalities and injustices which can easily contribute to further exclusion of certain groups from asylum procedure and decisions. Thus, as the inclusion of these factors will indicate that Especially asylum seekers from the Global South might reveal that Eurodac is allowing for ethnic and racial divisions and classification, as stated by Kindt. This is highly problematic as it can fuel racialized and gendered inequalities of asylum seekers from the Global South, as it might exclude groups from specific countries. This can also indicate the logic of securitization, where it is "justified" and "legitimate" because the threat is commonly understood and allows for countermeasures outside the "normal politics". It also reflects the theory of STS, which shows how the tool is politically determined by increased antimigration sentiments and narratives. Thus, EU member states and authorities are the ones that are proposing this regulation. This might interfere with the right to non-discrimination and equality and questioned in its proportionality.

The inclusion of facial image biometric in the proposed regulation as well as the fingerprinting is another central risk and implication related to criminalization, which can further the exclusion of certain groups in Eurodac. When it comes to facial image biometric, this is a highly intrusive biometric data and recognized to not work adequately on people of color and dark-skinned. This can lead to not only increased targeting, but also to a failure in enrolling or rejected data sets which can result in increasing the likelihood for a potential withdrawal of asylum applications. The proposed regulation also will allow to collect the fingerprints and facial image from children of six years. The current is set at fourteen years, which also can be criticized for being invasive, thus, lowering to six years infringes children's right to data equality and non-discrimination, enshrined in the Articles 20 and 21 in the CFR. It is worth noting that in the EU, it is not allowed to take biometrics of EU-citizens before the

age of eighteen. In addition to be invasive, have evidence shown that fingerprints and facial image of children can struggle to identify and recognize facial patterns and fingerprints, thus, increase the chances of children being subjected to exclusion in asylum procedures related in Eurodac. This reflects both the logics of securitization and postcolonial feminist theory.

Thirdly, the last risk and implications of Eurodac regarding the right to equality and non-discrimination is the one of self-harm and use of force. Thus, with the proposed regulation, it will allow the member states to allow sanctions on asylum seekers that reject or refuses to take fingerprints for Eurodac. These sanctions will be decided under the national law framework, hence, increasing the likelihood of asylum seekers to resort to self-harm by physically destroying their fingerprints through various means, such as acid or mutilation, as the FRA report stated which is an already recognized practice along the member states. As this proposed regulation will allow for sanctions decided within their national law framework, it can also increase the likelihood for the use of physical force by the front-liners on asylum seekers. This has already been testified is being done at the EU border by various front-liners and can further the likelihood of this happening more consistently and regularly. The practices of resistance and self-harm because of the Dublin and Eurodac system, should be seen as a concerning trend. Another concerning trend, is the use of force on asylum seekers to take fingerprints, which might also be introduced as a more regularly practice – as member states are allowed decide what sanctions and practices that will be done. This can open up the chances where asylum seekers are demanded to take their fingerprints by physical force by for example the border guards, Frontex or other designated authorities.

As a concluding remark, taken together, the theories of securitization, postcolonial feminist theory and STS has provided a comprehensive picture of the different trajectories of the EU migration system. This thesis, however, argue that the postcolonial feminist theory provides a more comprehensive picture of the empirical material collected, and indicates several of the inherent and underlying trajectories of the use of Eurodac in the EU and its member states. Several indicators found from the empirical material can be possible and potential indicators that Eurodac can foster inequalities and injustices based on racialized and gendered stereotypies. Moreover, the logic of the crisis narrative deployed in Eurodac, have revealed power asymmetries and inequalities where asylum seekers from the Global South are in greater risk of being excluded and targeted, especially through the proposed regulation's extended operationalization. Thus, recognizing the nature and presence of algorithmic bias and data discrimination, is dependent on a comprehensive understanding of the contexts,

methods and data utilized. These issues work seem to work in parallel and alongside EU's and its member states seen in their efforts in justifying its techno-solutionism where the logic of securitization and techno-determinism seem to be apparent in the current migration and asylum decision-making. Hence, these variables seem interconnected and interplays as trajectories. Migration and border issues within the EU are highly controversial topics, and has been widely scrutinized, however, the digital border practices seem to have been neglected in many instances. This might be traced back to the inherent logics embedded in societal structures, guided by both the idea that digital technologies operate outside socio-political influence, as well as historical evils from colonialism and power asymmetries.

This thesis wants to emphasize the fact that understanding the current digital border practices is a difficult task, which demands a careful investigation of the different social, political and power asymmetries. Although this thesis findings indicate that Eurodac may interfere with asylum seekers rights, it is still important to note that it is not statistically representative. Thus, investigating algorithmic bias and data discrimination is a an especially difficult task to undertake, because there is a lack of access and transparency in the member states practices. Further research investigating the national structure and operationalization of Eurodac, may contribute in this, however, this depends, at the same time, on more transparency and access. In the light of the Ukrainian Russian war, it can also be necessary to comparing the digital practices and differences in the treatment.

8.0 Conclusion

This thesis has investigated the current digital practices of the EU migration and border system, where several concerns have been highlighted relating to the use of Eurodac on asylum seekers. Having analyzed RQ1, the risk and implications of Eurodac regarding the right to privacy and data protection are particularly found within the reliability, security risks, interoperability, law enforcement and data retention. Regarding the right to equality and non-discrimination, the implications and risks are related to generalization, criminalization, self-harm, as well as the use of force. Having analyzed RQ2, there can be some indictors of the evidence collected that can indicate that asylum seekers from the Global South might be disproportionately affected by Eurodac. Algorithmic bias and data discrimination might be indicated through the increased rejected data sets, with an increase in the withdrawn asylum applications (140,000) which mainly consisted of Afghan, Syrian, Tunisian, Palestinian and Pakistani men, and minors. Another potential indicator of algorithmic bias and data discrimination is regarding the groups more greatly affected by law enforcement in the EU, which consisted mainly of Syrian, Afghan and Moroccan. Thus, as there was a 230 percent increase of CAT4 and 5, where 1,544 cross-searches in Eurodac were performed by law enforcement, this might explain the increased profiling and targeting of Syrian, Afghan and Moroccan. Regarding the inclusion of facial image and sensitive data such as nationality and gender, this can be considered in contributing to an increased algorithmic bias and data discrimination. Thus, evidence has illustrated how dark-skinned, and people of color are not being equally captured and registered in facial image biometrics compared to white men and women. Thus, through the proposed regulation this might further both the exclusion and bias, as well as discrimination. The same applies for the fingerprint biometrics where Asian, children, and elderly are not equally captured. At the same time, this thesis also recognizes that algorithmic bias and data discrimination is difficult to capture as it demands both transparency and accountability, which the EU and its member states seem to lack regarding the use of Eurodac. Thus, some of the findings can indicate traits where Eurodac might produce algorithmic bias and data discrimination on racialized and gendered inequalities, especially when looking at the general dynamics and trajectories within the current “Digital Fortress Europe” - which is fueled by securitizing and militarizing efforts.

As a concluding remark, this thesis argue that racialized as well as gendered power asymmetries can underpin the representations which is institutionalized in the “Digital Fortress Europe”. This can be seen through the increased expansion of Eurodac, through the

inclusion of more sensitive personal data, such as gender, race, and ethnicity, law enforcement, and its weak distinction between asylum seekers and "terrorists" or "irregular migrants", which, as a result, can disproportionately affect asylum seekers from the Global South. The findings in this thesis can be a potential general trend of how asylum seekers are treated at the EU border, which in this analysis is characterized by lack of safeguards on asylum seekers' rights and potential interference to their privacy and data protection, as well as their right to equality and non-discrimination. As a concluding remark, these trends are even more worrisome in the light of the current mainstreaming of far-right rhetoric across Europe, which fuels narratives and stereotypies of the racialized and gendered "other". The EU must ensure that treatment of asylum seekers both within the digital and "real-world" are complying to the human rights framework.

9. Recommendations

Considering recommendations for possible institutional implementations, EU and its member states must work coherently in ensuring that their digital practices are complying with human rights frameworks. Thus, an increased awareness and recognition of how digital technologies can be a strong tool which can reinforce and reproduce existing racial injustices and inequalities should be well-addressed in the EU. Furthermore, the EU must ensure that its member states follow the set rules and obligations, and that the front-liners and data users developing these technologies are not producing algorithmic bias and data discrimination. Increased transparency in the organizational structure as well as in EU member states can contribute to ensuring that these practices are following the set standards, by for example providing transparency on its deletion of data, insight in both training sets and models utilized on asylum seekers. This increased transparency can contribute to an increased accountability, as the member states will have to comply with data protection and be held accountable for biased training sets, purposely targeting racial groups, poor data quality and sequency errors, or other unlawful methods.

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