Department of International Relations and Development /Global Refugee Studies.

THESIS TITTLE

The crises that shaped the European Borders over the years and the vision of implementation of new advanced technologies

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Abstract

This thesis examines the role of technology in the European Borders in connection with the historical events that lead to the transformation of traditional borders into technologically equipped borders. Historical events such as the terrorist attack on the Twin Towers at 9/11, the Syrian migration crisis in 2014 and the Covid-19 pandemic in 2019 are being discussed in this thesis as the primary reasons that caused the evolution of border control and border management. Special attention will be given to Biometric data technologies, Artificial Intelligence and EU funded projects.

This thesis is a literature review of secondary qualitative data and European policies and measurements that were taken to mitigate the refugee flows in the European territories. It is also using the Actor Network Theory in order to explain how humans and non-humans, in this case technology, interact with each other. Furthermore, is using the What's the Problem Represented to be analytical framework of Carol Bacchi in order to address the reasons that increased the European interest in implementing AI technology in border management.

Keywords: Border Management, Migration, Biometric technology, AI technology

List of Abbreviation

AND	ACTOR NETWORK THEORY
AI	ARTIFICIAL INTELLIGENCE
CEAS	COMMON EUROPEAN ASYLUM SYSTEM
CIR	COMMON IDENTITY REPOSITORY
CRRS	CENTRAL REPOSITORY FOR REPORTING AND STATISTICS
EEC	EUROPEAN ECONOMIC COMMUNITY
EES	ENTRY/EXIT SYSTEM
EFC	EUROPEAN FINANCIAL COMMUNITY
EURODAC	EUROPEAN DACTYLOSCOPY
EU	EUROPEAN UNION
EES	EUROPEAN AUTOMATED FINGERPRINT IDENTIFICATION SYSTEM
EASO	EUROPEAN ASYLUM SUPPORT OFFICE
SIS	SCHENGEN INFORMATION SYSTEM
VIS	VISA INFORMATION SYSTEM

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INTRODUCTION

The concept and formulation of borders have been a long-decisive factor in the formation of the political, economic, and social configurations within Europe. Traditionally, European borders were considered a physical boundary between nations, a functional means of protecting sovereignty and regulating the movement of people and goods. However, over the last few decades, Europe's borders have transformed rapidly due to geopolitical shifts, migration crises, and the march of technology. This thesis looks at how European borders have moved—or, rather, are moving—from a rigid, physical boundary to sophisticated and technologically enhanced systems of surveillance and control. The research question of the thesis is

"How the European Borders have changed over the years and what are the visions of the European Union in the implementation of AI technologies?"

The thesis discusses the evolution of borders and border management techniques in the European Union, from the end of World War II until now. More specifically, it is focusing on the technologies that are adopted in the border management strategies and the vision of Europe to implement high technology AI at the European borders.

Events like the 9/11 terrorist attacks, the Syrian migration crisis in 2014, and the COVID-19 pandemic accelerated this transformation, prompting the EU to adopt more strict policies concerning border management. The root of such evolution is the ever-growing dependence on sophisticated technologies such as biometric data systems, artificial intelligence, and large-scale IT infrastructures that would raise security, manage migration efficiently, and reduce external threats.

The purpose of this thesis is to explore the interplay between technological innovation and the control exercised at the borders of the EU, by means of an embedded qualitative research design, incorporating a critical literature review and secondary data analysis that trace the historical development of border policies, their key crises, and the consequences thereof for the shift towards securitized borders. The role of EU-funded projects in shaping the future of European border management will be critically examined. It should concentrate in particular on the use of biometric technologies and artificial intelligence, considering in particular the implications that these may have for the freedom, security, and privacy of individuals who cross European borders.

The purpose of this thesis, therefore, will be to explore how these technologies have reshaped European border control and consequently answer the central question: how and why technology has transformed the concept and management of European borders over the years and what are

the future plans of the EU in regard to the implementation of artificial intelligence in border management.

THEORY

A preview of the technological development through the lens of the Actor Network Theory
I have chosen to use the Actor Network Theory in my thesis as it is important in order to answer the research question to first understand the complexity of the borders. More specifically, the borders are not static entities but rather are shaped by dynamic interactions of different actors. Borders are influenced by political decisions, human actors (governments, migrants, EU officials), and non-human actors (biometrics and AI technologies). Furthermore. I am using the Actor Network Theory because it is important to see the way these technologies interact with human actors, including EU policymakers, border officers and migrants resulting in the modification of border practices and regulations.

Actor Network Theory (AND) is a theoretical and methodological principle developed by Bruno Latour, Michael Callon and John Law. According to Latour in the Actor Network Theory, humans and non-humans interact with each other to make something work, they are building something together. The Actor is a human or non-human entity combined together and can change or be changed from a network consisting of other Actors. The Actors are in a conscious motion that means that the interplay between humans and non-humans is not a standard, solid situation but is always changing. And theory is interested in how associations/relations are made and transformed. (Blake, 2018).

"Actor or Actant is something that acts, or to which activity is granted by others. It may not necessarily be the source of an action, but something that modifies a state of affairs by making a perceptible difference. Additionally, it may have as many dimensions as it has attachments. Thus, an actor may be regarded as an intricate 'network' in its own right (Latour 2005, pp. 71, 129; Law/Mol 2008)."

"Network—(e.g. person, group, idea, material object, plant, animal, etc.) is an interactive assembly of actors, group, or 'string of actions' involving a number of potential mediators. More importantly, a network must leave a physical trace of some prior activity, which can be followed by a researcher and recorded empirically. Such a trace is made noticeable by conflict/controversy, flows of translation, labor, effort, movement and production." (Jim S. Dolwick, 2009).

ANT assumes the equal potential of the human and non-human components, referred to here as actants, to influence how the social-ecological systems, represented as actor-networks, evolve as relationships are formed and other actors are recruited. Actor Network Theory (ANT). emphasizes the interaction between agents and how such interactions impact the structure within a network of interconnected links. According to actor-network theory, agency exists only in associations between actors. To that end, material objects also can exhibit agency, just like humans do. The agency in ANT is somewhat different from those agencies adapted by other social theories. According to Rosin and Dwiartama in order to attain a better understanding of agency through ANT we revisit our considerations about relational complexity critically by changing our view from the system to the network. (Dwiartama, A., and C. Rosin,2014).

An agent according, may be understood as "any entity that modifies a state of affairs by effecting a change", This statement suggests that what matters is not the intentionality but the way it is conditioned-allowed, encouraged, hindered, or London School of Economics and Political Science LSE Research Online End. (Seijo, 2006).

In my thesis I will try to look at the development of technological equipment in the EU borders through the lens of Actor network theory. Turning into details, in the European borders, humans such as border guards, policymakers and Frontex Agency shape the process of border control in connection with non-human actors such as biometric technologies, AI tools and databases as well as physical border infrastructures (fences, walls, gates). Explaining this cooperation of humans and non-humans from the Actor Network Theory prospection, together they shape the process of border control since humans interact with technology. For example, the use of fingerprints and surveillance systems and technology in general affects human behavior, for instance how migrants are classified according to their facial expressions. The Actor Network Theory claims that human and non-human actors should be treated symmetrically. In the world of border control this means that the purpose of the technology at the EU borders is not only assisting humans during the border controls but is an active "player" in decision making processes, by deciding who is eligible for crossing the borders and who is not permitted access or considered as a risk. Furthermore, according to Actor-Network Theory, humans often assign obligations to non-human entities. At EU borders, a significant portion of the task for identifying, authenticating, and evaluating migrants is assigned to AI and biometric technologies. These technologies possess a degree of agency, automating decision-making processes occasionally without direct human involvement. This situation automatically gives a sense of authority to non-human actors, which in our case is AI technology and biometrics technology. (Dwiartama, A., and C. Rosin,2014).

METHODOLOGY

Research design

This thesis adopts a qualitative research design, appropriate for the social, political, and policy-related topics being examined. As such, the methodology is built around two key approaches: secondary analysis of qualitative data and policy analysis by using Carol Bacchi's "What's the Problem Represented to be?" (WPR) framework. This design allows an in-depth exploration of existing qualitative data and relevant policies in Border Management in Europe. Bringing these two methods together allows the research to delve into the data and policy context with a nuance that provides a much better understanding of the research question. The secondary analysis of qualitative data is chosen as the most effective and convenient method for researching the creation of the borders and the historical events that led to the development of a closer relationship between borders and technology. My aim is to understand the role of AI in the future and to do so I first look at the technology and how it has become part of border policies.

Source of Data

The secondary analysis involves the re-use of pre-existing data of previous studies. (Heaton, J., 2008). Secondary analysis can be used for two main purposes. The first purpose is for investigating new or additional research questions or using a different analysis strategy. The second purpose is to confirm the findings of the former research question. (Heaton, J., 2008). Secondary qualitative data is non-numerical and may have been collected and analyzed by other researchers, organizations, or institutions. The secondary data for this study is drawn from:

- Scholarly Literature: Journal articles, reports, and books relevant to this thesis.
- Government and Institutional Reports: A set of various publications and documents prepared by governmental agencies, NGOs, and policy institutions.
- Legislative Acts and Statutes: National and international laws related to the thesis research question.
- Policy Frameworks: Guidelines and frameworks that shape the implementation of policies.

- White Papers and Green Papers: Proposals and consultation documents that influence policy development.

The source of the data for this thesis is found on Google Scholar, the Online Library of Aalborg University, the Official Website of the European Union, the Official Website of Frontex and EU-Lisa. Furthermore, the selection of the sources is made considering some criteria that would ensure the relevance and validity of the findings. Those criteria are the selection of data that pertain to the topic, issues and inquiries of the thesis, also priority is given to datasets gathered within the past decade to guarantee relevance.

Policy analysis by using Bacchi's WPR framework

The second approach of this thesis is the "What is The Problem Represented to Be?" analysis of the political scientist Carol Bacchi. This approach is being used as a tool to understand and analyze the visions of the EU for the implementation of Artificial Intelligence in the borders. I have decided to apply the "What's the Problem Represented to be?" (WPR) analysis as a method for policy analysis because of its distinctive approach in exposing the underlying assumptions and problem representations embedded within policy frameworks. The WPR method promotes a deeper exploration into how issues are framed within policies and the broader societal implications of these framings. Moreover, it facilitates a critical evaluation not only of the issues the policy aims to address but also of how the problem's definition itself shapes policy direction, public opinion, and outcomes. Through WPR, my goal is to uncover the power dynamics at play in the policy under review, providing a more nuanced insight into its effects and limitations. Furthermore, the WPR analysis gives a more accurate answer to the research question whose purpose is to identify what historical and socio- political events lead to the adoption of technologies in the European borders and how the EU is visioning that the borders will look in the future with the use of more technology and AI.

What is WPR?

The key term in the WPR framework is "problematization", whose usage is inspired by Michel Foucault. According to Foucault, concepts have no standard meanings, but they are "tactical weapons" or means for political change. Problematization in Foucault's approach is mobilized into different ways. In the first distinction, "problematization" is used as a verb which Foucault refers to as "thinking problematically". The second distinction takes a noun form and refers to the "historical process of creating objects for thought". These "objects for thought" contrast with

the "objects" of natural reality and they do not merely "exist" as necessities; rather, they become something by actions. Foucault characterizes them as "the very forms of "problematization." (Carol Bacchi, 2021). In the WPR analysis, Carol Bacchi is combining those two analyses of problematization by "thinking problematically" about the "object of thought".

In the WPR analysis, Carol Bacchi suggests that in order to "think problematically" we should use "proposals" or "proposed solutions" as fundamental elements for considering problematizations and, we should maintain that as political subjects, we are regulated by problematizations rather than policies. (Carol Bacchi, 2021). Bacchi suggests that in WPR analysis we need to start with the "proposals" because they produce problematization. More specifically, what an individual proposes to do about something implies that they think that it needs to be changed, and this leads to the creation of problematization. In 1999, Bacchi, being influenced by the Actor Network Theory, shifted the emphasis of the WPR analysis from a constructionist to a performative. (Carol Bacchi, 2021). In a performative perspective, problem representations are not just competing descriptions of a" problem", but rather they represent the

"Realities" that govern us. The analytical work does not involve investigating individuals' perceptions to discover how they imagine a "problem"; it involves investigating the policy itself and the ways that policy creates "problems" as particular kinds of matters-of-concern through its propositions. The focus shifts from individual to governmental matters. (Carol Bacchi, 2021).

Bacchi's six guiding questions to analyze the problematizations are:

1. *What's the problem represented to be?*
2. *What presuppositions or assumptions underlie this representation of the problem?*
3. *How has this representation of the problem come about?*
4. *What is left unproblematic in this problem representation?*
5. *What effects are produced by this representation of the problem?*
6. *How and where is this representation of the problem being disseminated and defended?*

(Carol Bacchi, 2021).

Procedure of the Policy Analysis

From the above questions that frame Bacchi's analysis, I am going to apply in my analysis question one, question two and question three. The choice on those three questions is made

according to the data that I have gathered, which allows me to discover the answer to those questions. My aim is to apply the WPR analysis in two ideas that are developed from the EU, which rely on the use of AI during border control. Those ideas and future aspirations are the Large-Scale IT system of EU-Lisa and the Intelligent Portable Control System or iBorderCtrl. The content of the EU decisions on border management are examined using Bacchi's framework in order to highlight key sections and quotations. Furthermore, attention is given to the ideological, social, and political beliefs embedded within the representation of the situation.

Limitations

Some limitations of the secondary analysis of qualitative data include lack of control over the original data collection process. The purpose of the original research in some cases does not align with the aims of the secondary data analysis in my thesis so the collection of the right information from each research might be challenging sometimes, leading to gaps in analysis.In addition to that, the way the original data was collected and interpreted by the primary researcher may introduce biases or influence the secondary analysis. Another limitation regarding the policy analysis is that policies frequently encompass complex and diverse difficulties, which may restrict the ability of Bacchi's WPR framework to comprehensively address all the factors of the problem since it focusses on questions and problematizations.

THESIS OUTLINE

The thesis will start by discussing the creation of the idea of a state and the need to be separated from each other. It continues with the end of World War II when most of the European countries were devastated from all those years of war and the necessity to create alliances was born. This necessity will lead to the creation of the European Union in 1993, which is being discussed in the first chapter of the thesis together with creation of the Schengen area. The idea behind the discussion of the creation of the EU and the Schengen area in the first paragraph is to give us a clear overview of the need of the countries to create alliances after years of war and devastation. Furthermore, it gives emphasis on the optimism of the great belief of United Countries with common policies that motivated them.
It continues with the after Schengen period and the breakdown of the Dublin Regulation and the new restrictions in the Schengen area. The chapter gives an extensive analysis of the "sudden"

crisis that hit the European countries. It is focusing specifically on the terrorist attack of 9/11 when the fear of the unknown was reactivated, the Syrian Civil war of 2011 which had consequently huge flaws of migrants approaching the European Countries. I have chosen to focus specifically on those two crises as it is believed that they constitute the most crucial events that changed European Border history. The answer that I am seeking to get from this analysis is how fear and threat re-shaped the great belief of unity and open borders into the urgent need of new rules and policies that will provide safety to the European territories. The chapter continues with a discussion of the development of the European Agency of Frontex which gives a more detailed example of the External Border Management control that was established and re-shaped after the migration crisis. After understanding the reasons that drove Europe to the adoption of more strict rules, the thesis continues in the third chapter with a specified focus on Biometric Technology. Continuing to the third chapter, its goal is to provide an in-depth discussion of the adoption of Biometric Technology such as fingerprints, facial recognition, DNA test in the European Borders. The literature that is used in this paragraph is from the texts of Anja Simonsen, who gives a clear overview of the forms and characteristics of the Biometric Technologies as well as the purpose of their use in the borders. In addition to that, more literature is used from the European Commission online page which explains with clarity the Smart Borders project of the European Union. The Smart Borders project refers to various measurements and Technology Innovations of the European Union to maintain better Border Management. The Entry and Exit System (EES) and the European Travel Information and Authorization System (ETIAS) are some of the Smart Border Innovations discussed in this thesis. The whole chapter gives a detailed description of the border evolution and is written with the purpose of giving answers on "How is technology implemented in the European borders? What kind of technology is used?".

The next chapter of the thesis describes the development of Artificial Intelligence Technology that is used in different aspects of our everyday life with borders being one among them. We first try to look at AI as a social control tool that monitors and influences human behavior. How the future, possible adjustment of AI will affect the process of border checks, the decision making of border guards and the whole migration journey. In order to investigate more details, I chose to analyze with the WPR framework a newly funded project of the European Union and a collaborative Agency. The project that is being discussed is the iBordersCtrl and Agency is the EU-Lisa. EU-Lisa is a European Union Agency that is discussed to be in charge for the Management of Large -Scale IT Systems around Freedom Justice and Security of the European Union. The source of information for this Agency was the official web page of EU-Lisa where it explained its purpose and capacity. The EU-Lisa is in charge of the Visa Information System (VIS), EURODAC and Schengen Information System (SIS). The analysis of the EU-Lisa gives our thesis further information about the development of the technology in the European borders and the vision of the EU for technological advanced border control. Both visions represent an algorithmic approach of border control and a real example of the willingness of the EU to change

the shape and features of the borders. They are also discussed in this thesis as the solution that the EU thought of to the problem of migration and fear of terrorism. As I mentioned, I chose to analyze them through the lens of the WPR (What is the Problem Represented to be?) theory of Carol Bacchi who suggests that governance is influenced by "problematization", and this can generate solutions and subjectivities for individuals addressed by policies. The WPR theory of Carol Bacchi is used in this thesis to help me look at the iBorderrCtrl funded project and the collaboration with EU-Lisa as the "proposal" of EU to the problematization of the border control. It gives an understanding of what does EU defines as being a problem on the Borders and how AI is introduced as a solution.

CHAPTER II

Chapter Summary
As I am seeking to answer my research question, I have decided that the first step is to investigate the borders, their creation and the establishment of the European Union and the Schengen Area. This historical background is needed to see how much borders have transformed, from the free movement of people to the desire to implement biometrics and AI technology. The first paragraph of this analysis is devoted to the devastation of World War II and the need of European countries to create alliances and economic agreements. The second paragraph discusses the period of the establishment of the European Union with the Maastricht Treaty and the creation of the Schengen zone and the great idea of open borders and free movement of goods and people. Even though European countries set grand expectations with the concept of free movement, the reality of the migration crisis and the fear of terrorism changed the plans. In the last paragraphs of this chapter, I am going to discuss the adoption of new legal frameworks and the agencies responsible for their implementation.

The first movements of people and the creation of early alliances

Before the beginning of World War I in 1914, there were nearly no border controls or limitations on labor mobility throughout Europe. During the war, the movement of foreigners across borders became a security issue, leading to the introduction of passports and visas in Europe. During World War II, significant changes happened in European territories, and Europe was experiencing economic growth, encouraging labor mobility. The lack of working hands was considered as a barrier to economic growth so the freedom of movement of skilled workforce was included in the European Financial Community (EEC). From 1958 to 1972, which was the guest-worker period, about 8 million work permits were granted to foreigners in Belgium, France, Italy, Luxembourg, the Netherlands, and West Germany, the initial six members of the EEC. One-third of the foreign workforce originated from the EEC, from Italy, which was experiencing industrial stability and elevated unemployment rates. An end to the movement of workers was put in 1973 when the oil crisis started, and they were expected to leave the country and come back only when the economy needed them. (Saara Koikkalainen, 2011)

In 1957, the European Financial Community (EFC) was founded to create a union of free development of products and individuals. The reasons for the EU creation were built through the disasters of two wars that had devastating consequences with millions of deaths and destroyed economies. People and politicians were seeking peace, security, economic stability, development, and wellbeing. The idea of establishing the EU was a process that has its roots in the 1920s and 1930s and during the years of the Second World War in the 40s. One of the proposals for a "free and united Europe" came in 1941 by Altiero Spinelli and Ventotene Manifesto and other political leaders in exile that wanted post-war integration. In May 1945 when new governments started to formulate after the war, Belgium, the Netherlands, and Luxembourg established the "Benelux" which was a politico-economic union and intergovernmental cooperation of those two countries. (Ross Balzaretti, 2011).
 This opened the way for more cooperation between the European countries with France and the United Kingdom signing the Treaty of Dunkirk in 1947 which worked as an alliance Treaty on the fear of a German attack after World War II. A year after the establishment, the countries of "Benelux" became a part of the Dunkirk Treaty, and this extension led to the creation of the North Atlantic Treaty Organization (NATO) with more countries joining the alliance. This is proof of the willingness of the countries to belong to a common political alliance that will protect them from an enemy. The next movement after the establishment of NATO was taken in May 1949 when Denmark, France, Belgium, Ireland, Italy, the Netherlands, Luxemburg, Norway, UK, and Sweden created the Council of Europe which in 1950 was also joined by Greece, Turkey, Iceland, and west Germany. All these establishments show us how important cooperation started to become among countries and how in need they were to be a part of a bigger integration system. In the following years new Unions started to be created among the European countries such as the European Economic Community (EEC), the European Free

Trade Association (EFTA), the European Political Cooperation (EPC). In 1984-85 the Single Market project was adopted, and its purpose was free trade of goods, services, capital, and free movement of people. (Idoko Ilemona Ijeoma, 2023).

In total, 27 countries became a part of the Single Market project which led to the creation of a new treaty, the Single European Act. The Single European Act expanded its focus beyond the single market, and its new competences were the environment, economy and society, and common legislation and social policies. With the creation of such supranational agreements and cooperations, the idea of building a new agreement of a European Union was not far away. (Ross Balzaretti, 2011).

In the next paragraph, I will discuss the creation of the European Union and the Schengen area. I am interested to see the motivations behind this idea of the free movement of people and the great expectations of the EU. In that way it would be clearer to understand how things shifted from free movement to new stricter regulations which came because of the crises in Europe. Those crises also caused the breakdown of the Dublin regulation and the cooperation with the Frontex agency which are also going to be discussed in this chapter.

The creation of the European Union and the Schengen agreement

The end of World War II brought a new era among the European countries, where it became important to promote peace, economic stability, and unity. More specifically, after the end of World War II the European Countries decided that they should build stronger relations that will protect them from conflicts in the future. One example of building new relations was the creation of a mutual dependency by connecting their economic interests. This strategy was intended to discourage war between the states by making it economically illogical and therefore less probable. (Parsons, 2002). In May 1950, the Schuman Declaration mentioned the elimination of economic borders in the Coal and Steel Market as a step closer to the creation of a European federation. This idea was reaffirmed in the Treaty of Rome, signed on March 25, 1957, which added to the vision of a "borderless Europe" the abolition of customs duties on goods. (Birte Wassenberg, 2020). In 1980, the idea of the free movement of goods and the borderless market was further developed by the Single European Market project which highlighted the free movement of people and capital. The Single European Market was suggested by the Jacques Delors Commission in 1985, and it started from France, Germany, and the Benelux countries which wanted to build a free movement of goods and people as a response to the strikes of the Italian and French customs officers in 1984. This in turn led to the signing of the "Schengen

Agreement" which is an international treaty, near the Luxembourgish border town of Schengen. The agreement was signed by five members of the European Economic Community (EEC) in June 1985. (Birte Wassenberg, 2020). The Schengen Agreement according to the website of the European Commission is a product of government-led attempts to improve collaboration and eliminate internal boundaries to achieve greater economic and social integration. This agreement aimed to gradually remove border checks at the shared borders of the signatory countries. Nowadays, the Schengen Agreement and the Schengen borderless area comprise 27 European countries. (Mariusz Maciejewski, 2023). As is clear, the European countries were seeking ways to create even closer integration with common policies.

The EU was created to develop a stronger identity and facilitate collaboration on a wide range of subjects beyond economics, such as environment, justice, and foreign policy. (M. Guibernau, 2011).

The foundation of the European Union is the Maastricht Treaty in the Netherlands, which was signed in December 1991. The treaty set up clear rules for the European Union which were the adoption of a common currency in the future, the common foreign and security policy as well as the collaboration in justice and home affairs. The following rules became official for the European Union on 1st November 1993. The interest of Europe in adopting unified decisions was extending even more, in different directions. (David Phinnemore, 2022). Thus, in 1997 the Amsterdam Treaty was signed and the first step to the creation of the Schengen area as we know it today was taken. The Treaty of Amsterdam updated the Maastricht Treaty by clarifying the actions of the EU with the intention of making it an area of freedom, justice and security. Some of the features of the treaty were to set a common foreign policy and strategy, allowing police cooperation among the countries. According to Martin Lemberg, the idea of the "Area of Freedom, Security and Justice" on the EU external borders depends on a set of idealized realism and geopolitical assumptions that creates an ideology that reduces states to geographical containers of people, sovereign powers, and societies. (Martin Lemberg-Pedersen, 2017).

The idea was to allow people who belong to the Schengen countries to travel and move freely. The requirement was the implementation of a shared policy for visa and asylum application, the so-called Schengen Information System (SIS) which was recording information about goods and persons transiting the zone of Schengen. The agreement came into force in March 1995, after the creation of the EU with more countries joining the idea of non-border control and free movement. This freedom permits residents to travel freely throughout the Schengen Area without having to go through border controls. No one is subject to border checks when crossing internal boundaries, regardless of their country. However, if these checks are different from border checks, the appropriate national authorities may conduct police checks at internal borders and in border areas. (Johan Wagner, 2017). The primary objective of the Schengen zone is to safeguard its residents by encouraging greater cooperation among the police forces, customs agencies, and external border control authorities of all member nations. These new types of collaboration have been implemented to balance any potential security shortfall caused by the

elimination of internal border controls. Thus, according to Johan Wanger, the Schengen area was established to improve the methods of communication among law enforcement agencies and help with the surveillance of suspects across national borders and cooperation in operational activities. In addition to that, it allows police authorities to engage in direct data sharing. This gives a significant benefit in the battle against terrorism and against significant and organized criminal activities, such as human trafficking and illegal migration. The Schengen zone now covers more than 4,300,000 km², stretching from the Arctic to the shores of the Mediterranean. (Johan Wagner, 2017)

The Dublin Regulation

The Dublin convention was first negotiated by the Member States of the European Community in 1990, and it was replaced by the Dublin Regulation (Dublin II) in 2003. The purpose of the creation of the Dublin Regulation was to stop the so-called "asylum shopping" which is a tactic when asylum seekers apply for asylum to the countries with better asylum benefits or to countries where the chances of being accepted are higher. (Kimara Davis, 2020).
The Dublin Regulation was drawn up by the European Parliament and the Council of the European Union to designate the first EU agency in charge of processing the applications of asylum seekers. It introduced a mechanism that determined the Member state in charge of examining an asylum application and to guarantee that every asylum claim was thoroughly investigated. (Jason Mitchell,2017). When the asylum seeker arrives at a member state the Dublin Regulation allows a state to ask the state that is responsible under this regulation to take responsibility or return the asylum seeker, in case the person travels outside of the country in which they were originally placed. This idea is based on the logic that the Member State which played the greatest role in allowing the asylum seeker to enter the EU bears the responsibility.

(Jason Mitchell,2017). The Dublin Regulation derives its authority from the Treaty on European Union and the Treaty on the Functioning of the European Union. The Dublin Regulation also introduced EURODAC, the database system that keeps records of the fingerprints of the asylum seekers.

After Schengen area

In the following paragraphs I will discuss how the Schengen area transformed from the area of "Free Movement of People" to an area of intensive border control followed by the breakdown of the Dublin Regulation. My purpose is to understand which incidents affected European Unions' decision making regarding the Border Management tactics and how this will lead to the willingness to adopt new technologies at the borders.

According to Elspeth Guild in recent years, Europe has been tested by a series of crises which led to the adoption of more strict regulations. The idea of the Schengen zone based on free movement started to break down. This made the implementation of it difficult for the European countries who had to take new measures to protect their territory. One of those crises is the refugee crisis that started from the end of the Cold War with the collapse of the Soviet Union and former Yugoslavia and Balkan crisis. In these periods, the EU faced massive displacement of people. The challenges that European countries dealt with highlighted the need for improvement of the collaboration on border management. Another refugee crisis on the Canary Islands with an annual average of 7.300 migrants approaching Spanish territories. The Spanish Government requested help from the European Union as it was unable to deal alone with this crisis. The EU responded by introducing a new operation called HERA which has as main objectives to locate and identify migrants arriving in the Canary Islands and preventing vessels with refugees leaving the African territory. (Elspeth Guild, 2016)

The refugee crisis that threatened most European territories according to Mariusz Maciejewski was the Syrian Civil war in 2011 which played a crucial role in the development of the European border management system. By 2016 approximately 4.8 million refugees who left Syria came into European territory and 8.7 million inhabitants who were expelled internally, so-called internally displaced persons. The number of refugees who arrived in European territory seeking asylum was an unexpected incident that Europe chose to deal with by taking new measures to protect its borders. In May and July 2016, the European Commission put forward a third package of seven legislative proposals. These proposals' objective was to establish an asylum

policy that is efficient, fair, and humanitarian and can effectively handle high levels of migration. In 2017, the European Parliament and the Council reached a comprehensive political consensus on five out of the seven measures. These measures encompass the creation of a fully functional European Union Asylum Agency, the restructuring of Eurodac, the change of the Reception Conditions Directive, the modification of the Qualification Regulation, and the construction of the EU Resettlement framework. Considering the significant importance of the previous Agency, the European Asylum Support Office (EASO) in dealing with the migratory crisis and its restricted authority, the Commission introduced a fresh proposal for a European Union Asylum Agency (EUAA) on 4 May 2016. After the co-legislators reached a political agreement on this proposal in 2017, the Commission urged for the prompt approval of the proposal for the EU Agency on Asylum in the Pact on Asylum and Migration. The agency's rule was enacted on 15 December 2021 and came into effect on 19 January 2022 after successful talks with the European Parliament and Council. (Mariusz Maciejewski,2024)

As Birte Wassenberg claims, the Schengen crisis essentially shattered the "illusion" of a borderless Europe, highlighting that national borders remain vital during emergencies, especially concerning security and migration control. The 2015 events marked a significant shift in the EU's stance on borders, migration, and security, emphasizing the need for stronger coordination at the European level to handle future crises more efficiently, even though the Schengen Agreement is still in effect. (Birte Wassenberg, 2020).

According to the website of the European Commission, in 2017 the European Parliament decided to reinforce its Common European Asylum System (CEAS) including the reform of Eurodac. In addition to that, in May 2016 a new proposal for a European Union Asylum Agency was posed with the purpose of the enforcement of the asylum process with new tools and financial means. (European Commission, 2019)

Following the migration crisis, a fear of terrorism threat was born in Europe especially after the 9/11 attack on the Twin Towers. The EU quickly realized that the established migration system was not enough to overcome those challenges. As a response to that, a new regulation was introduced, regulation (EU) No 1168/2011 which modifies the initial legislation to enhance the coordinated administration of the European Union's external borders and to strengthen collaboration among national border guard authorities. In addition to that, EU regulation No 767/2008 established the Visa Information System in 2011 which was adopted by the European Parliament and the Council of the European Union. The Visa Information system is responsible for facilitating the visa application procedure, assisting with border checks and asylum applications by providing information. It is also one of the key factors that facilitates cooperation among law enforcement agencies which oversee detecting terrorism and criminal activities. Regulation (EU) No 656/2014 is an additional modification that establishes regulations for

monitoring the European Union's external maritime borders. This monitoring is carried out as part of operational collaboration overseen by Frontex. Frontex's main responsibilities became the arrangement of collaborative operations and swift interventions at the external borders using personnel and equipment from EU countries across sea, land, and air. It also oversees joint efforts to deport foreign nationals who are residing illegally in the EU and Schengen countries and are unwilling to leave voluntarily. Additionally, the Agency develops uniform training standards and tools for national border guards and conducts risk analyses to enhance the integrated management of the EU's external borders. (European Commission, 2019).

The breakdown of Dublin Regulation
Due to the migration crisis that Europe faced in 2014 with migrants coming from Middle Eastern countries, Italy, Greece, and Hungary due to their geographic location were overburdened with the arrival of migrants. The European Commission responded with a new revision of the Regulation, and it came into force in January 2014. Dublin III introduced an early warning system for Member States when their asylum systems might fail and established a hierarchy of indicators to establish which Member State was responsible. (Koba, 2020). According to the Dublin III regulation the migrants should register and apply for asylum in the Member State that they enter first. The prohibition on returning asylum applicants to countries with "systemic flaws" was the more significant element of Dublin III and the fact that it established an early warning and readiness system to spot shortcomings in the asylum systems of Member States before they became a problem. (Birte Wassenberg, 2020).
Since May 2015 due to the massive flow of migrants, Hungarian authorities responded by building a fence in its borders while in Greece and Italy migrants were suffering from the lack of infrastructure. With relation to the Syrian migrants, Germany declared in August 2015 that it was independently suspending Dublin. By the end, it was expecting 800,000 asylum petitions. In collaboration with France, they were asking from the European Commission to create a new objective regime of relocation of the asylum seekers. The European Commission announced a new plan in September 2015, and it proposed the relocation of 15,600 migrants from Italy, 50,400 from Greece and 54,000 from Hungary. (Marko Lovec, 2017). Moreover, in the proposal was included a permanent relocation mechanism that the European Commission could control at any time. When Hungary tightened its border control and finished building the fence, in October 2015 the migrants were using Slovenia as a route to their journey to re-enter EU and Schengen. The European countries started to feel threatened by this massive wave of migrants and they increased their internal border controls to keep them outside their territories and "push" them to the neighboring countries. The Dutch government then suggested the creation of a new "mini-Schengen area" which will work as a protective shield to the Benelux countries (Belgium,

Netherlands, and Luxembourg) as well as for Germany and Austria. Since most of the countries turn negative towards the migrants, the European Council Summit the re-establishment of the Schengen area in November 2015 and the priority became the protection of the external borders and not the humanitarian concern anymore. (Marko Lovec, 2017)

The Frontex Agency

Frontex is responsible for providing support to Schengen countries that need more technical and operational assistance at their external borders, such as during humanitarian emergencies, sea rescues, or when they face excessive pressures on their borders. In order to provide this support, it establishes a quick response capability that involves EU Border Guard Teams, along with a database of equipment and resources that can be deployed during crisis situations. According to Katja Franko and Helene Gundhus, Frontex has been the representative of the militarization of the European borders, and it has been criticized plenty of times for its operations in the Mediterranean from International Organizations, EU Agencies and Non-Governmental Organizations (NGO). Moreover, they argue that problematizations have been raised about the protection of human life and dignity in the European external borders. (Katja Franko Aas and Helene O. I. Gundhus, 2014).

Frontex was first established in 2004 after the adoption of the Hague programme by the European Council. One among the 10 priorities of the programme was the improvement of integrated management of external borders and the development of a new, more balanced, approach to the management of legal and illegal migration. (Sara Leonard,2007). Frontex was the agency in charge of the management of the external borders, and in 2017 was rearranged as the European Border and Coast Guard Agency.
Following the terrorist attacks in Madrid and London in 2004 and 2005, EU border security was bolstered even more. EU security and migration had an even closer relationship because of this episode. Since then, border controls have received increased attention in the sphere of migration policy. More specifically, to better coordinate and advance Europe's response to the terrorist threat, European leaders decided to create the post of EU Counter-Terrorism Coordinator. They also collaborated intensively with competent national authorities to pinpoint areas of action to mitigate potential terrorism risks to Europe's security. (Pierre Berthelet, 2017).
This response was observed in the weeks that followed. Additionally, the EU's external action involves aiding states in enhancing their legal systems and law enforcement capabilities, as well as including measures to avoid radicalization within their security programs.
The agencies responsible for supporting the EU's external action are Europol and Eurojust. Europol serves as the official agency of the European Union for its mission of organizing and promoting cooperation between law enforcement authorities. The organization serves as the main

link for interaction among law enforcement agencies in EU member states, allowing the exchange of information and intelligence to fight diverse forms of serious international crime and terrorism. Europol helps European Union member states combat transnational criminal activities such as organized crime, cybercrime, terrorism, and other illicit acts. It offers analytical and operational assistance and coordination for collaborative investigations and operations around Europe. (Europol Website, 2024).

Eurojust is an agency that aims at improving judicial cooperation among national judicial authorities in member states of the European Union. The purpose is to strengthen the synchronization and collaboration of investigation and legal actions linked to significant transnational and organized criminal activities within the European Union.

Furthermore, regarding the terrorist threat fear in Europe, in 2015 and 2016, was established the "Air Travel Cycle" by the UN Counter Terrorism Implementation Task Force (CTITF) Working Group on Border Management Related to Counter-Terrorism in collaboration with the Stimson Center in order to stop terrorists from moving within the boundaries of Cooperative and Coordinated Border Management. The "air travel cycle" is referred to the pre-departure, departure, pre-arrival, arrival, and post-arrival stages of international passenger flight and it outlines fundamental actions to stop terrorists and other criminals from moving across borders while promoting international trade and tourism. (Johann Wagner, 2017).

Another crisis that the EU has faced over the years is the health-related crisis of COVID-19 which became the reason for changes in the European Union Border Management strategy. The COVID-19 crisis underlined the insufficient of the current rules to respond to disease related crises. In March 2020 the European Commission suggested the application of restrictions to travelers coming from third countries into the Schengen area. The suggestion was adopted in June 2020 by the European countries who followed the same line with non-EU travelers, especially the ones coming from countries with highly epidemiological danger situations. (European Border and Coast Guard Agency, 2021).

To sum up, this chapter has established the groundwork for understanding the historical evolution of European borders, which initially wanted to achieve economic cooperation and unity after the devastation of WW2, and it ended with the establishment of the European Union and the Schengen Area. As a result of the pressures of migration crises, security concerns, and technological advancements, the initial ideal of open borders, which was intended to facilitate the free movement of goods, people, and services, has undergone a transformation. The Schengen Agreement and the EU's border policies have been influenced by external crises, such as terrorism, refugee waves in Europe, and health emergencies like COVID-19, as evidenced by the changes in legal frameworks. This chapter serves to understand the transformation from

"open borders" with the vision of unity to stricter controls and regulations. It also provides the background that is necessary to proceed to the next chapter that is focusing on the adoption of Biometric technologies in the European Borders.

CHAPTER II

Technology in the European Borders

In this chapter I focus on the role of technology in securing and managing the European borders. My interest is the evolution of technology at the borders and the adoption of sophisticated technological solutions in border controls. More specifically, I will focus on biometric technology, which includes fingerprints, face scans, and iris scans and it is used widely by the different border management agencies over the last years. Furthermore, the chapter will explore the new agencies cooperating with the EU for more efficient border management and the modern technologies used. From this chapter I am seeking to answer how the borders have changed, and they have become a space of technological adoption.

Origin of Biometrics

Some forms of biometrics have been used since ancient times, the figures of the body, the handprints and the facial characteristics have been used as means to link certain individuals with documents and items. Handprints have also been used during the sixteenth century in the Chinese divorce Certificates. It is unknown if they were used as a form of identification or for ritual purposes. Biometrics have been a topic of research by anthropologists in the nineteenth century and more specifically the American anthropologist Franz Boas talked about anthropometry, an early tool of physical anthropology used for measurement and identification of the human body. Several other prominent individuals are credited with the development of biometry: Alphonse Bertillon, a French police officer, who devised a method for measuring and classifying physical features for criminal records, Cesare Lombroso, an Italian psychiatrist, who proposed a theory of criminal behavior grounded in biological factors through the analysis of skull and facial structures; William Herschel, a colonial administrator, who introduced the use of fingerprints as signatures in colonial India; Henry Faulds, a Scottish missionary and physician, who uncovered fingerprints on ancient pottery in Japan and promoted their use in criminal identification; and Francis Galton, an English mathematician and psychologist, who created a comprehensive fingerprint identification system. (Karen Fog Olwig, Kristina Grünenberg, Perle Møhl and Anja Simonsen, 2020).
In 1892, Francis with his new book "Fingerprints" took the credit for the invention of fingerprinting that belongs to the most common type of biometric system.

Researchers, criminologists, administrators, and funders designed systems of human identification and classification to establish clear links between specific entities and persons, in the interests of law and the state at that moment. They envisioned and wrote into effect the possibility of modern biometric securities. In those days, it was believed that the fingerprint records production, filing, and comparison was such a manpower-intensive task since they were 'physically tethered' to 'specific locations'. Jonathan Finn has put forward that in principle the police could take photographs of an almost unlimited number. In practice, the existence of fingerprints would disable the archive. The larger the archive, the more difficult searching became and the lower the probability of positive matches. Currently, collection and analysis of biometric prints (hand, palm, or fingers), face features, and vein patterns have been digitized and are stored in much reduced, small databases that allow algorithmic search by the computer processing. (Karen Fog Olwig, Kristina Grünenberg, Perle Møhl and Anja Simonsen, 2020)

According to Anja Simonsen, biometric technology has played a key role in border management all over the world since 1990. Biometric technology refers to an identification system that

categorizes individuals according to their biological and behavioral characteristics. Those categorizations have been the subject of research by some scholars that focus on how individuals are placed into "boxes" according to their facial, body characteristics and how this phenomenon can lead to racism and discrimination. Furthermore, some studies are focusing on the human body's transition into a technologically coded body using ID cards. (Karen Fog Olwig, Kristina Grünenberg, Perle Møhl and Anja Simonsen, 2020) A fundamental feature of biometric technologies is their capacity to provide precise identifications and databases of border crossers, therefore providing quick access to management of a complicated border world in view of what is thought to be significant worldwide migration.

Another opinion according to Rocco Bellanova is that data collection through biometric technology may include violence. He argues that biometric technology is often used by different agencies, humanitarian organizations, and the military through a broader data infrastructure. This infrastructure may include violence in the way that data is collected, stored, and generated. Rocco gives the example of a Somali man named Abdul who applied for family reunification in Denmark, and he needed the biometric information of his family to prove their connection. To achieve that he had to pay an agent to illegally transfer his family to Denmark to complete the biometric identification. (Rocco Bellanova,2021).

Simonsen focuses on the biological recognition that biometric technologies offer. They have been the best alliance in the border management system of countries since they recognize and keep a record of every passenger that crosses the borders. In other words, this tool provides help to the government to protect their borders and being in control of them and in control of the massive international migration. Simonsen and the other authors argue that their ethnographic research highlights that biometrics are not just tools for security but are systems combined with the cultural and social contexts of the regions where they are used. These technologies help create what they describe as a "biometric border world," where the physical boundary is not only geopolitical but biopolitical, embedded in the bodies of those who cross it. This shift has profound consequences for refugees and migrants, especially when biometric data is used to determine family reunification eligibility through DNA testing. (Karen Fog Olwig, Kristina Grünenberg, Perle Møhl and Anja Simonsen, 2020)

Some of the most common biometric technologies are fingerprints, DNA, facial recognition, and ID photos. Fingerprints are unique for every person, and they are widely analyzed for security reasons. During a biometric border control, the fingerprints are "live scanned" with an electronic scanner that senses the surface of the finger. The purpose of fingerprints is to store the person's biological information and compare it with other fingerprints, and according to the results, it allows or disables passengers from crossing the borders. DNA tests have a vital role in migration

control as they allow us to compare biological characteristics of individuals. (Kristina Grünenberg, Perle Møhl, Karen Fog Olwig,Anja Simonsen, 2022)

This comparison allows the state to control who is entering its territory and it helps migrants during their application for family reunification. Biometric technology is used to help refugees in need of housing, healthcare and legal advice. Biometric facial recognition is described as the ability to use algorithms that can detect and analyze features such as ears, eyes, nose and facial shape that can be stored and used in the future for comparison. Facial recognition has the unique capacity to capture someone from a long distance and is also used to compare someone's live image capture with their passport image. The last and most essential tool of biometric technology border control is the ID photo at the individual's documents that are crossing airports and land borders. The ID photo is used to detect similarities and differences between an individual's face and ID picture. (Kristina Grünenberg, Perle Møhl, Karen Fog Olwig,Anja Simonsen, 2022)

The development and adoption of biometric technology tools in the European borders has been accelerated due to the increase of anxiety and insecurity. Biometric technology became a part of the border management system with millions of funds focusing on this development. The feeling of insecurity was given rise due to the attack of the Twin Towers that changed the way borders were structured and increased the sense of security with focus on external threats. (Louise Amoore1, Stephen Marmura2 and Mark B. Salter, 2002). As a follow up to this, by 2009 it became compulsory for most EU citizens to own biometrics passports with facial image and fingerprints and in 2014 a new project started with the purpose to be implemented by 2020. The project was called "smart border package" and was focusing on fighting irregular migration and terrorism by improving the external border management of the Schengen Area. This is achieved by separating people into legal travelers coming from the EU and to illegal travelers that should not enter as well as non-EU citizens.

Although security measures have traditionally targeted transnational or cross-border crime, the nature of illegal activities has evolved. The securitization of migrant and traveler mobility has grown problematic due to the perceived threat posed by greater mobility into and across the 'borderless' Schengen region. Recently, there have been significant acts of terrorism, such as the attacks on September 11, 2001, in the US, March 11, 2004, in Madrid (Spain), and July 7, 2005, in London (UK). These incidents have been perceived as major disruptions by both society and

security organizations and have effectively altered security policy priorities. Biometric technology has become part of EU border management measures from the early 2000s to increase border security.

The development of biometric databases in the European Union (EU) has had a profound effect on our understanding of human mobility, the relationship between surveillance methods and human rights and ethical concerns, and the enforcement of regulations. This chapter gives a comprehensive review of the historical development of various biometric technologies and database systems, such as DNA technology, fingerprinting, and facial recognition. It also explores their application in migration control and law enforcement. (N. Amelung, 2021).

The rise of organized transnational criminal activity has advanced in tandem with the emergence of information and communication technology (ICT), resulting in the occurrence of virtual and financial crimes, as well as facilitating the global transfer of funds.
Since the late 1990s, the European Council has increasingly focused on the exchange of information between police agencies. The Area of Freedom, Security and Justice was established to create a unified strategy for Justice and Home Affairs (JHA) across the European Union. This strategy emphasizes the facilitation of cross-border information exchange. The Tampere Programme argued for the idea of 'mutual recognition' to encourage confidence, whereas the Hague Programme established the principle of 'availability', which required Member States to provide information to other Member States. The Stockholm Programme prioritized the safeguarding of human rights in criminal proceedings as a core principle of the Union. (N. Amelung, 2021)

Biometric technology and databases play a role in a developing vision that can be easily used to support political goals of strengthening border control to facilitate European integration. The addition of 10 new members to the EU in 2004 led to a perceived necessity for more coordination and collaboration. The goal of improving border control later involved creating biometric data exchange systems, including the Visa Information System (VIS), Schengen Information System II (SIS II), and EURODAC centralized database systems. (Mirko Forti, 2024).

Pedersen (2015), a specialist in European security studies, identified two distinct methods of organizing integration using data information systems: vertical Europeanization and horizontal Europeanization. Vertical Europeanization refers to the utilization of European institutions to establish or develop various centralized European databases for specific objectives. However, horizontal Europeanization occurs when Member States directly obtain data from one another without involving European institutions. Law enforcement agencies have historically sought to

uphold state authority and have consequently chosen decentralized approaches that enable the preservation of certain aspects of state sovereignty. (N. Amelung et al, 2021)

Since the implementation of the initial EU-wide biometric information database system (EURODAC) in 2000, the development of various biometric database systems in Europe has focused on the expansion of 'datafication'. According to the European Parliament's Policy Department, this process involves converting social actions into digital quantified data, which can be tracked and easily accessed for further analysis. The database system's intended functions and target audience have significantly expanded since its inception. The goal of EURODAC was to allocate the responsibility of individual asylum requests among Member States and to avoid the practice of asylum shopping. Subsequently, EURODAC was made available to law enforcement agencies. The wide use of the Visa Information System (VIS) used fingerprints as a biometric identity and focused on individuals not citizens of the European Union. Since 1995, the SIS had implemented a unified database that allowed authorities in each Member State to obtain alerts regarding individuals and assets. SIS II, the upgraded version of the Schengen Information System, was introduced with improved features, such as the incorporation of biometric data. In June 2018, policymakers reached a consensus on a new set of measures for the Schengen Information System, which will be fully implemented by 2021. (Policy Department for Citizens' Rights and Constitutional Affairs, 2021).

The prevailing policy narrative argues that this combination facilitates police collaboration in cases where a missing and undesired individual is involved, as well as border control cooperation in managing the movement of migrants in illicit circumstances. The most recent version of growth is the present 'interoperability' program, which seeks to link several centralized database systems and enable data to be accessed for many purposes, as well as to simplify the process for users of law enforcement, judicial, migration, and asylum systems. (N. Amelung et al,2021)

The European Union's financial support for the European Network of Forensic Science Institutes (ENFSI) facilitated enhanced cooperation among laboratories across Europe, leading to the establishment of a comprehensive pan-European database system known as Prüm. The decentralized system, referred to as 'forensic technocracy,' has been considered as a potential solution for achieving interoperability in the future. Every Member State has the independence to set regulations and entities involved in the exchange of data, with each country appointing a National Contact Point (NCP) for providing data. The national criminal DNA database is usually under the custody of the Ministry of the Interior, Ministry of Internal Affairs, or Ministry of Home Affairs. Belgium, the Netherlands, Portugal, and Sweden each have a Ministry of Justice responsible for supervising public prosecutors and upholding the legal system and public order. (N. Amelung, 2021).

The next paragraph is devoted to the examination of the Smart Border package. The Smart Border package is a set of measurements taken by the European Commission with the purpose of improving the management of the European External Borders. In order to achieve that, the Smart

Border package aims at facilitating the border crossing systems with better technology. The purpose of the discussion around this development in the European borders it to see how the European Union wants to formulate its borders by implementing better technologies. The Smart Borders package is an example of the belief that technology implementation equals more efficient border management and of the future visualization of the borders.

Smart Borders

The EU's "smart borders" package is linked to the use of innovative technology for control and information processing, including the Entry and Exit System (EES) and the European Travel Information and Authorization System (ETIAS).

Biometrics, the utilization of distinct and individual human characteristics to establish a unique identification, has been extensively implemented at the European Union (EU) level since 2015. The necessity to adopt novel system solutions arose due to the difficulties encountered by the European Union, namely during the refugee crisis of 2015. In 2014, approximately 16 million uniform visas were granted to non-European Union (EU) travelers visiting the Schengen area. In 2015, over 50 million individuals from non-EU countries traveled to the EU for tourism, education, and business purposes. These travelers were responsible for over 200 million border crossings at the external border of the Schengen area. (European Commission, 2024).

The problem of illegal immigration is a substantial menace to European security, as evidenced by Frontex data which reveals 2.3 million instances of unauthorized border crossings documented between 2015 and 2016. In 2017, the EU had 618,000 third-country nationals illegally residing on its territory, indicating an increase in the number of illegal stays. Implementing advanced control mechanisms and biometric technology innovations were essential for effectively managing the movement of travelers and enhancing the monitoring system for third-country citizens crossing borders. The Smart Borders Initiative of 2011 and the 2013 'Smart Borders' Communication were designed to enhance the efficiency and expediency of border crossings for non-EU citizens seeking entry into the European Union. This initiative sought to benefit both travelers and the European economy. The Registered Traveler Program and Entry/Exit System were suggested as novel techniques to streamline the entry process for non-EU citizens into the European Union. As of May 25, 2018, the European Union has implemented regulations governing the handling of biometric data, which is considered sensitive. Processing of this data is only permitted in specific exceptional circumstances outlined in the Regulation. Utilizing biometric data in border control has been a top concern for the European Union (EU) due to the increased risks associated with migration pressure, the refugee crisis, and terrorist acts. (Zawadzka, S., 2022)

Utilizing biometric data for purposes not specified in the regulation would constitute a significant infringement on the privacy of individuals whose data is being handled and might potentially endanger their safety. In 2020, the European Commission released a White Paper to outline the potential hazards associated with utilizing artificial intelligence for data processing and provide corresponding advice. One crucial component pertained to facial recognition technologies and the use of biometric data. The gathering and utilization of biometric information for the objective of remote identification poses a specific threat to the fundamental rights of individuals. Remote facial recognition should be examined in terms of the right to privacy and the safeguarding of personal data. Artificial intelligence can only be utilized for remote biometric identification purposes if there is a valid justification, it is proportionate, and it is accompanied by adequate safeguards to ensure the protection of individuals' privacy, in accordance with the relevant EU data protection law and the provisions of the Charter of Fundamental Rights of the EU. (Zawadzka, S., 2022)

The operation of specific organizations, IT systems, and databases that introduce, collect, and process biometric data is governed by distinct documents that define these procedures. The European Data Protection Supervisor oversees the appropriate utilization of data, namely in compliance with the legislative framework and adherence to the principle of privacy.

The European Commission has been updating the Visa Information System (VIS) to mitigate risks such as unlawful border crossings and terrorism. In 2018, three new Regulations were approved with the objective of introducing additional categories of alerts for initial interviews, unidentified perpetrators, preventive alerts for children who are at danger of being abducted by their parents, and decisions about the return of third-country nationals who are living unlawfully. The Entry Exit System (EES), which was launched in 2011, gathers fingerprint data from asylum seekers in the EU. It verifies if the applicant has already applied for asylum in another Member State or has been previously apprehended while trying to enter the EU unlawfully. (Website of the European Commission, 2024).

The European Automated Fingerprint Identification System (EES) was created in 2017 to oversee migration procedures for non-EU citizens, including those required to have a visa and those exempt, but only for temporary stays. The design of the EES was predicated on the premise of interoperability with the VIS, thereby enabling authorized authorities to access the information stored in the VIS through the Entry/Exit System. This enables pertinent visa

authorities and border services to access the EES, starting from the VIS level, to streamline handling of visa applications and judgments. (Zawadzka, S., 2022)

The primary objective of the EES system is to mitigate the occurrence of redundant information across several systems and improve the overall effectiveness of data management. The implementation of these improvements is intended to enhance the management of migration in the European Union (EU) through the EES system. (Zawadzka, S., 2022)

Advanced technology solutions will allow governments to automate the processes of entering, collecting, and verifying data of third-country people through self-service kiosks. These kiosks enable tourists to input their information, establish a personal record, and undergo border inspections. The system autonomously validates alphanumeric and biometric data and conducts searches in security databases to identify individuals who pose a threat to security. This complies with the Regulation of the European Parliament and of the Council dated 15 March 2017, which mandates the verification of travel papers for all individuals, regardless of their country, by utilizing the Schengen Information System (SIS II) and the Interpol database. (Zawadzka, S., 2022)

The European Union (EU) is establishing a system to augment security and oversight in border management. The system gathers personal and travel documentation from individuals who are not citizens of the country, which includes their given names, family names, nationality, date of birth, and gender. Biometric data, such as facial photos and fingerprints, plays a vital role in establishing one's identification. The Entry Exit System (EES) database retains all information for three years if the stay concludes within the designated period, or for five years if the stay is prolonged. (Website of the European Commission, 2024).

The technology is utilized by visa authorities to process visa applications and by immigration authorities to authenticate identification and validate the legality of admission and stay. Member States establish a specific roster of authorized authorities who can access the gathered data for law enforcement. Europol grants access to system data exclusively for the aim of detecting serious crimes. Access is provided upon request and approval. (Zawadzka, S., 2022)

The primary objective of the EES is to enhance the security of the European Union by identifying persons who infringe upon the right to reside in Member States and present a risk to public order. The system will autonomously compute the maximum duration remaining before the deadline for departing the Member States and document all pertinent details in the border crossing register.

The EES system operates on a pan-European IT network mechanism, enabling efficient verification of personal data and automatic retrieval of required information. This technology would eliminate the need for human stamping of travel documents, hence enhancing the accuracy and dependability of information regarding border crossing.

The European Union (EU) has implemented a biometric system to deter the entry of individuals who may pose a risk to internal security, public health, and public order. The system's objective is to identify people who may already be in the EU and detect them before they cross external borders. The entrance and exit system will employ biometric data as a prerequisite for crossing the border. The European Commission intends to overhaul the interoperability of all extensive systems, including the identity multiplication module, to identify and address such occurrences. (Zawadzka, S., 2022)

The European Travel Information and Authorization mechanism (ETIAS) was formulated in November 2016 with the aim of enhancing the availability of information on individuals crossing the border and establishing a mechanism for granting travel permits to Member States following an electronic pre-screening process. ETIAS and EES are two distinct systems. ETIAS is applicable to those who are not required to obtain a visa, while EES is applicable to foreigners who are subject to the visa necessity. The registration of personal data in the EES occurs at border crossing sites, and the functions of both are intimately interconnected. (Zawadzka, S., 2022)The ETIAS mitigates the lack of knowledge about the specified group of individuals and facilitates their initial evaluation. The purpose is to assess if third-country nationals who are exempt from the short-stay visa requirement constitute a significant risk to internal security, and if their trip to the Schengen region is linked to the potential for illegal immigration or an elevated risk of spreading diseases. The solution enhances the functionality of the EES as a tool for intelligent border management while also safeguarding the security of the EU. (Zawadzka, S., 2022).

CHAPTER IV

Artificial Intelligence at the EU borders

This chapter explores how Artificial Intelligence is discussed to be introduced in the European Borders. After all the measures that have been taken on, in order to strengthen border management, the EU has turned to AI to curb the problems. Specific focus will be given on understanding how the European Union is visualizing the borders. How is imagining what the borders in the future will look like, with the implementation of Artificial Intelligence technology? The first paragraph is a general introduction to Artificial Intelligence, the way that it has been a part of our lives and how it is connected to social control. In the next paragraphs I'm going to discuss in which way the European Union wants to implement AI in the borders. In the last paragraphs, I treat the EU ambitions of equipping its border with AI technology as policies by applying the WPR analysis of Carol Bacchi.

An introduction to AI

Artificial Intelligence has become an influential tool for social control that rapidly develops and is changing even the very governing systems of modern society. AI is no longer just a symbol of scientific progress. In today's rapid world, AI systems have become applied to monitor, predict, and control human behavior with an example being the broad utilization of face recognition technologies. Furthermore, AI has been taken up by law enforcement agencies, corporations, and schools for monitoring and tracking purposes. (Catarina Fontes, Ellen Hohma, Caitlin C. Corrigan, Christoph Lütge, 2022). As these systems proliferate further, they allow population-level surveillance at a larger scale and, in turn, facilitate easy ways for the authorities to extend their command over public and private spaces. Beyond facial recognition, the increasing use of AI in policing and the justice systems in general makes it representative of an instrument of social control. Predictive policing algorithms, supposed to assess risks and predict behaviors, are already affecting major judicial decisions, including bail and sentencing. The influence of AI even extends to broad spheres of decision-making, as governments and businesses increasingly rely on these systems for complex fields like health care and public policy. (Catarina Fontes, Ellen Hohman, Caitlin C. Corrigan, Christoph Lütge, 2022). The reliance on large sets of information for the decision-making process of AI is transforming real-world activities into measurable in-form—a process coined datafication. This, in turn, is the data underpinning the predictive and analytical capabilities of AI, now transformed into a tool of control for state and corporate actors. Dataveillance, characterized by rapid and extensive monitoring via big data collection, is more common and insidious than typical surveillance tactics, which are often direct and goal oriented. (Andrea Vicini, 2022). AI dataveillance continuously observes individuals' activities and tendencies. The growth of AI systems accelerates, causing the distinction between effective governance and intrusive governance to become increasingly unclear. (Steven Feldstein, 2019).

Artificial intelligence is expected to enhance efficiency in industries like healthcare, human resources, and commerce by analyzing vast quantities of data to assess risks, enhance

predictions, and carry out tasks at a significantly faster pace than humans more accurately. Similarly, border management is an area where governments and technology proponents highlight the potential of AI to enhance the security and efficiency of international borders, and in certain instances, improve safety as well. AI has become a widely used technological tool in a lot of aspects of everyday life, including EU borders and is used to perform tasks that otherwise would require a huge human workforce and a lot of effort. In the field of border management, AI is promising to provide more accurate information by using face and voice recognition and more sufficient work. AI technologies designed for border security encompass a range of applications, including algorithms that evaluate travelers nuanced and imperceptible emotions, biometric analysis of fingerprints and facial recognition, and scanner software capable of distinguishing between humans and wildlife in remote border regions. Several of the technologies rely on surveillance techniques that have been utilized in different versions for several decades. (Hannah Tyler, 2022). Artificial intelligence can improve surveillance by enhancing the efficiency and capability of tools to analyze and comprehend bigger volumes of data compared to prior methods. Nevertheless, the rapid adoption of these technologies, often surpassing the development of legal frameworks to control their usage, has also raised concerns about privacy and the growing surveillance by the government, not only of migrants and visitors, but also of entire communities on a larger scale. (Hannah Tyler, 2022).

 In May 2020, the Commission released a paper that outlined the potential benefits and difficulties associated with integrating AI tools for immigration purposes. It also unveiled a portfolio of activities that will be executed according to a strategic plan, known as a 'roadmap', spanning from 2021 to 2025. Meanwhile, the utilization of specific AI tools, particularly the development of algorithms for profiling Schengen visa applications, has been seen. The integration of travel authorizations and the gathering of facial photos to proactively utilize biometric identification at the borders is already incorporated into the functioning of information systems for third-country nationals (TCNs). In April 2021, the Commission approved a proposal for a regulation that establishes standardized rules on artificial intelligence (AI). (Niovi Vavoula, 2021).

In the following paragraphs, I will look closer into the possible changes the EU aims to focus on to strengthen its border management. Furthermore, I will discuss the potential collaboration of the EU with a Large-Scale IT system agency named EU-Lisa and the funded project of Intelligent Portable Control System

What are the opportunities the EU sees in the use of AI at border control

According to Costica Dumbrava, in 2020 the Research Service of the European Commission identified five opportunities for implementation of AI technologies in the European border control. Those included: chatbots and virtual assistants, risk assessment and application triaging in the context of the visa process, knowledge management tools, policy insight and analytics tools, and computer vision applications to gain insights from image processing of individuals. (Costica Dumbrava, 2021).

Moreover, Costica Dumbrava claims that in a report in 2020 EU-Lisa provided its AI strategy: i) To supply the computing infrastructure required to develop and test AI solutions with key stakeholders, ii) To propose AI solutions within the performance monitoring domain, service management, virtual assistants, cybersecurity, and energy efficiency. The EU-Lisa agency, according to Dumbrava, looks at these applications as giving minimum or no ethical and legal concerns. Moreover in 2021, Frontex released a study on artificial intelligence technologies and capabilities for border security. Several potential AI applications for automated border control and surveillance were identified in the study. (Costica Dumbrava, 2021).

Furthermore, several EU-funded studies have tried to develop AI systems that detect human emotions and identify lying within border control contexts. The Intelligent Portable Control System-or iBorderCtrl-was devised to deliver a decision support system for border control inspections with automated deceit detection. Funded from 2013 until 2019, the project garnered €4.5 million in EU funding. Several pilot tests were conducted within several land border crossing locations in Hungary, Greece, and Latvia as part of this initiative. In contrast, the deception detection method offered here would interview a traveler with an avatar to find 'biomarkers of deceit': non-verbal facial micro-expressions associated with lying, such as blinking with the left eye alone, unusual redness of the face, and head movements in a particular direction. The study indicated an accuracy of 73-75% differentiation between deceptive vs. truthful. The study's results and overall method and implication have been strongly debated. (Angelanna Andreou, 2023). Another EU-funded project is the "ROBORDER" which focuses on automating the monitoring of the EU's external borders, allowing authorities to quickly detect potential risks. The main tools involved are AI-powered autonomous robots, designed for both air and underwater operations, equipped with technologies such as sensors, thermal imaging cameras, and radar systems.

According to Andreou, despite the significant potential that AI technologies offer, there have been raised ethical concerns regarding accuracy, ethics, and cyber-attacks. Even though the national and supranational bodies aim to protect the fundamental rights and safety of European citizens, their actions can frequently violate individual freedoms. In 2019, the EU Agency for Fundamental Rights (FRA) criticized the deployment of these systems, highlighting the human rights risks associated with automated border controls. The predefined and categorization of the ethnicity, gender, and nationality can lead to discriminatory or illegal profiling of asylum seekers

or visa applicants. In addition to that, automatically categorizing people as high or low risk diminishes human dignity and overlooks the subjective nature of threat assessments, which are inherently biased. Automated predictive algorithms that operate independently of human discretion can often result in flawed decision-making. Moreover, the lack of transparency in these systems prevents decision-makers from explaining the rationale behind the system's conclusions. (Angelanna Andreou, 2023).

As is clear in the above paragraphs, the European Union has focused on incorporating Artificial Intelligence (AI) into its border management systems to boost security, efficiency, and oversight. Agencies like EU-Lisa and projects such as the Intelligent Portable Control System (iBorderCtrl) are a part of the vision of applying Artificial Intelligence in the European borders. These efforts aim to improve risk assessment accuracy, streamline border control procedures, and align with the EU's goal. In the following paragraph I will explain the role of the EU-Lisa and the iBorderCtrl project to understand the visions of the EU and how they imagine the borders in the future.

EU Lisa

EU-LISA is a European Union Agency in charge of the operational management of large-scale IT Systems. It was established in 2011 by the EU regulation No 1077/2011, and it became active in December 2012. EU-LISA is the first agency in European history responsible for managing and promoting Information and Communication Technology (ICT). The Agency currently manages the administration of Eurodac, the upgraded version of the Schengen Information System (SIS II), and the Visa Information System (VIS). (EU-Lisa website, 2011)
The systems. EU-Lisa acts as the provider of the communication infrastructure that connects the Member States and relevant EU Agencies to the central systems managed by the Agency. Furthermore, the Agency is tasked with supervising the Visa Information System (VIS)which serves as the communication platforms for the VIS and Eurodac systems, respectively. To fulfill this need, the Agency is accountable for guaranteeing the uninterrupted functioning of all IT systems within its authority, always facilitating the smooth exchange of data between national authorities, without any disruptions.
EU-Lisa will oversee establishing the most stringent methods of information security and data protection to protect the information it receives. It will guarantee that personal information is managed with fairness, legality, and precision, completely complying with the relevant data protection principles and legislation. (EU-Lisa website, 2011)
Additionally, EU-LISA is tasked, as specified in its revised legal mandate, with the establishment and operational supervision of the Entry/Exit System (EES), the European Travel Information Authorization System (ETIAS), and the European Criminal Records Information System - Third Country Nationals (ECRIS-TCN). The development and modification of both new and existing systems aim to ensure interoperability, which refers to the improvement of

accessing information stored in EU information systems and managing identities at the EU level. The development of the interoperability technical components, such as the Common Identity Repository (CIR), the European Search Portal (ESP), the shared Biometric Matching Service (BMS), the Multiple Identity Detector (MID), and the Central Repository for Reporting and Statistics (CRRS), follows a sequential process that can only occur after the implementation of EES and ETIAS. (EU-Lisa website, 2011)
The revised mandate enhances the Agency's obligations, granting it a more prominent position in conducting research, guaranteeing the integrity of data in systems, and supervising the implementation of pilot projects, proofs of concept, and testing operations.

European funded project for the implementation of Advanced Technology in the Borders
The European Union (EU) actively supports and encourages research and innovation in artificial intelligence (AI) technology. In addition to its investments in fundamental research through the European Research Council, the European Commission (EC) allocates significant resources to applied research programs aimed at addressing the major socio-economic concerns of the EU. This research is considered essential for progressing towards a wealthy future. Applied research aims to offer solutions to specific problems, while basic research systematically explores a subject to expand understanding of phenomena. In the following paragraphs is going to be discussed the EU funded pilot project of Intelligent Portable Control System (iBorderCtrl), which is part of the EU "Smart Borders" project.

The iBorderCtrl is a project that ran from September 2016 to August 2019 with a 4.5 million fund from the European Union. The objective was to facilitate efficient border control for third country nationals entering the European Union (EU), using advanced technologies that align with the future evolution of the Schengen Border Management. The goal of iBorderCtrl is to enhance effectiveness and efficiency of border controls, and mitigate illegal crossings, expenses, time, workload of border agents, and instances of human errors. iBorderCtrl has created and assessed a comprehensive system that allows people to register in advance and enables operators to use portable units at different land border crossing locations, such as roadways, sidewalks, and train stations. (European Commission, 2016).
In addition to the existing functionality of current border checks, such as verifying travel documents and validating traveler identity, iBorderCtrl would enable additional features and innovations through the various modules that make up the system and their combinations. Some of those new features are a pre-registration stage of the travelers before arriving at the borders and a later border crossing stage which includes a personalized avatar according to the gender and nationality of the travelers which conducts interviews to them, the use of new biometric technology such as face matching and palm vein scanning and data statistics of travelers.(European Commission, 2016).

The iBorderCtrl project develops the tools that will gather and process passenger data. This includes facial recognition, biometrics, and document verification machinery. It goes beyond ordinary biometrics because it embeds technology to recognize behavior, such as decoding non-verbal micro-expression to detect the probability of deception. This process is referred to as "biohacking," whereby there is an attempt to measure the state of the mind through physiological signs. iBorderCtrl assigns risk scores to the travelers based on acquired data that are applied to make real-time border control decisions. It consolidates information from public sources like social media and commercial ones, credit card companies among them to build profiles, thereby rendering individuals "data doubles" which undergo automated risk evaluations. It highlights changing the system from one that is rule-based to one that is risk-based, where travelers are classified dynamically and assessed in real time based on data patterns. (Dimitri Van Den Meerssche, The European Journal of International Law, 2022)

In fact, iBorderCtrl integrates these findings within a system intended to provide real-time actionable intelligence to help relevant authorities to decide on appropriate measures, which can be enhanced surveillance or refusal of access. (Dimitri Van Den Meerssche, The European Journal of International Law, 2022)

> The program represents a shift toward an algorithmic approach to border control where individuals are not just judged according to fixed criteria but are constantly reevaluated using changing data and predictive analytics. Such systems challenge legal frameworks by operating outside of hard-won norms and creating new forms of discrimination through their reliance on data-driven sorting. This shift from rule-based to risk-based governance is documentary evidence of an extended development in "border control" with iBorderCtrl. (Dimitri Van Den Meerssche, The European Journal of International Law, 2022).

The application of WPR analysis

In this section of this chapter, I intend to apply the What's the Problem Represented to Be? analysis of Carol Bacchi into the two visions that the European Union has for its borders. The first is the collaboration with EU-Lisa and the second is the iBorderCtrl funded project that runs from 2016 to 2019. The method I will follow is treating those two visions as policies and answering the first three questions of Bacchi's problematization which are: 1) What is the problem represented to be? 2) What presuppositions or assumptions underlie this representation of the problem? 3) How has this representation of the problem come about? My goal is to see how Europe wants to reshape its border with technology by using the method of Carol Bacchi which provides a critical analysis of the problems and the assumptions that are made for the future use of technology.

Question 1
What is the problem represented to be?
 The problem represented in this thesis is the insufficient border management processes so far. The unsuccessful protection of EU territories from external factors such as terrorism, migration flows and pandemics is represented as a matter of national security. In the case of the cooperation with the agency of EU-Lisa, the issue at hand involves fragmented data systems, poor sharing of information and a lack of coordination among member nations' during the border control processes. The strategy outlines this as a shortfall in both technology and organizational structure. Moreover EU-Lisa, the European Agency for the Operational Management of Large-Scale IT Systems in the Area of Freedom, Security and Justice, is in charge for the improvement of the value of Information and Communications Technology (ICT) of the citizens of the EU and thus enabling it to facilitate and proactively contribute to the success of the EU's policies in the area of justice and home affairs. (EU-Lisa strategy, 2018-2022).

On the other hand, with the Intelligent Portable Control System or iBorderCtrl funded project of EU from 2016 to 2019 the first problem is the speed of the border controls. As is written on the webpage of the European Commission, this EU funded project is called upon to provide a solution to the traffic that is created every year at the external borders from the huge number of travelers and vehicles. This volume of travelers makes it difficult for the border guards to check on every passenger's passport and conduct biometric analysis. Furthermore, another problem is the human errors that might occur from the traditional border control methods which can include

security risks. And here comes the Intelligent Portable Control System to offer faster, more efficient, and more secure control systems.

Question 2
What presuppositions or assumptions underlie this representation of the problem?

The assumptions I will discuss in this paragraph are the same with both analyses, with only some slight differences. The first assumption that goes for both policies is the belief that more technology, for example IT systems with EU-Lisa and lie detector and more biometrics with iBorderctrl can result in better border management. This automatically connects technology with efficiency and success. It also assumes that technology could also guarantee the security of the citizens and solve the complex political and social issues of illegal migration, terrorism and additionally help with the prevention of crime. (European Commission, 2018). In the case of EU-Lisa another assumption that has been made is that the cooperation and integration of the EU member states through the IT systems will also strengthen border management. (EU-Lisa Strategy, 2018-2022).

Irregular migration is represented in both cases as a security threat that needs to be and can be eliminated by advanced technology. Another important assumption that has been made in the presentation of the problem is that technology is infallible and unbiased. Starting from the lie-detecting avatars in the iBorderctrl project which are promised to detect irregular travelers and travelers that constitute threat and moving on to the IT systems of EU-Lisa. The agency ensures that the IT systems will be working 24 hours per day, 7 days per week to facilitate uninterrupted exchange of information among authorities. Moreover, regarding information security and data protection, it ensures that entrusted personal information is handled fairly, legitimately, and accurately, in strict compliance with the applicable data protection principles, legislation, and regulations. (EU-Lisa Strategy, 2018-2022).

Question 3

How has this representation of the problem come about?

The representation of the problem as a lack of technological development has its roots in socio-political changes and in the ambitions of the EU to implement technology in the area of border

management. Regarding socio-political issues and concerns, as I have mentioned in the previous chapter, the EU started developing new policy goals after the 9/11 incident which increased the fear of terrorism among the European States. Furthermore, more policies were adopted in response to the 2015-2016 "migrant crisis," during which Europe saw a large influx of asylum seekers. The crisis placed considerable pressure on EU member states, revealing weaknesses in the existing border control and migration management systems. In response, the EU sought to strengthen border management by enhancing information-sharing mechanisms and fostering better cooperation among member states.

Additionally, the European Commission's focus on migration, security, and terrorism has led to increased reliance on digital tools, such as databases and surveillance technology, for managing external borders. EU-LISA, the agency responsible for managing large IT systems like the Schengen Information System (SIS), Eurodac, and the Entry/Exit System (EES), became a key player in these efforts.

Conclusion and Discussions

This thesis reflects on the transformation of European Borders from physical barriers to technological systems. In order to explain this transformation, it starts with a historical analysis of the creation of the European Communities, the Schengen Area which was based on the idea of free movement of people and goods and finally at the creation of the European Union. It Continuus by exploring how crises, such as the 9/11 attacks, the Syrian migration crisis, and the COVID-19 pandemic, affected the European Border management and accelerated the adoption of biometric. An example of this transition is the establishment of Frontex and the challenges during the 2014-2015 migration crisis, when countries like Italy, Greece, and Hungary implemented stricter control measures. In the last chapter of the thesis, emphasis is given to the development of Artificial Intelligence technologies and how this technology is viewed by the EU, which desires its implementation at the border.

More specifically, the use of Artificial Intelligence (AI) at EU borders marks a significant shift in how the European Union envisions future border control. Systems such as biometric identification, AI-driven surveillance, and other advanced IT systems are seen as potential solutions to the growing challenges of border control in an increasingly interconnected world. However, while AI offers numerous opportunities for innovation, it also raises serious ethical concerns regarding privacy, individual rights, transparency, and the risk of bias. This is also one of the key takeaways of this thesis, that technologies like biometric identification and Artificial Intelligence can lead to racism and discrimination from the racial profiling of individuals and the automated decisions that could negatively impact the human rights of migrants and asylum seekers.

Analyzing the two EU potential applications of Artificial Intelligence, through Carol Bacchi's WPR framework I explain the underlying assumptions driving this technological shift. This analysis is also helpful because it explains how the EU is relying on technical solutions for its' border control. Furthermore, in my thesis I apply Carol Bacchi's WPR (What's the Problem Represented to Be?) framework to reveal how EU border policies frame migration as a security threat. This framing justifies the militarization of borders and increased willingness to use AI technology.

To sum up, the evolution of European borders reflects the socio-political changes that have taken place inside and outside the European Union over the last years. The incorporation of biometric technologies and the visualization of the implementation of AI in the European Borders represents not only a shift in the methods of border management but also emphasizes how the EU is addressing challenges related to migration and external threats.

Limitations and Future research

The first limitation of the thesis is that it is relying on secondary data, which can affect the in-depth analysis of the phenomenon. Furthermore, it doesn't allow the exploration of real time incidents that can affect the findings. Alternatively, case studies and interviews on the people who have been affected by those technologies could have given deeper insights on the impact of ethical issues. Furthermore, secondary data can be challenging in terms of bias as the original data collection is beyond my control.

The thesis focusses on specific incidents that affected the transformation of the borders and border management, while there are more sociopolitical and economic reasons and interests that lead to the creation of unions, agencies and the adoption of biometric technologies. Future research could focus on the analysis of more incidents in the past and in present that are affecting border control as well as new technologies that are being developed around the borders. In fact, future research

could analyze the human impact of these technologies, how they affect the migration routes and if the application of such technologies is problematic for human rights. Since Artificial Intelligence technology is still a vision that hasn't been implemented yet, more research can be done about the influence it has on decision making after the implementation.

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