Universidade de Évora - Escola de Ciências Sociais

Mestrado em Relações Internacionais e Estudos Europeus

Dissertação

The EU's ambition to influence global standards for Artificial Intelligence amongst regulatory competition with China and the USA

Breno Barbosa de Oliveira

Orientador(es) | Evanthia Balla

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A dissertação foi objeto de apreciação e discussão pública pelo seguinte júri nomeado pelo Diretor da Escola de Ciências Sociais:

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ABSTRACT

Artificial Intelligence (“AI”) is one of the most transformative forces of our time, sparking interest and rivalry among governments around the globe. Amid growing international tension, the European Union (“EU”) seeks to champion a unique regulatory approach to AI, vested in its core foundational principles, leveraging normative power to lead and influence the global standards of such technology. By doing so, the EU aspires to become a “strategically autonomous” geopolitical actor, distinguishing the European AI approach from the main contenders, China and the USA, all the while challenging state-centric sovereignty concepts to turn its ambition into reality. This essay explores AI under the lens of regulatory competition and the inherent dilemma of the EU becoming sovereign over AI. It then discusses the EU’s regulatory approach in light of such great-power competition. The work contributes to the growing literature debating AI, digital sovereignty and geopolitical regulatory competition.

Keywords: Artificial Intelligence; EU; digital sovereignty, China-USA; regulatory competition; geopolitics.

A ambição da UE em influenciar os padrões globais de Inteligência Artificial em meio a uma competição regulatória com a China e os EUA.

RESUMO

A inteligência artificial (“IA”) é uma das forças mais transformadoras de nosso tempo, que fomenta o interesse e rivalidade de governos ao redor do mundo. Numa crescente tensão internacional, a União Europeia (“UE”) procura defender uma distinta abordagem regulatória para a IA, embebida em seus princípios fundadores, a alavancar seu poder normativo para liderar e influenciar os padrões globais daquela tecnologia. Ao assim fazer, a UE aspira a se tornar um ator geopolítico “estrategicamente autónomo”, a diferenciar-se dos principais concorrentes, China e EUA, e ao mesmo tempo desafia conceitos estatais de soberania para tornar sua ambição em realidade. Esta dissertação explora a IA sob as lentes de competição regulatória e os inerentes dilemas à UE tornar-se soberana sobre a IA. Discute-se então a abordagem regulatória da UE à luz desta competição de grandes potências. Este trabalho contribui com a crescente literatura acerca da IA, soberania digital e competição regulatória geopolítica.

Palavras-chave: Inteligência Artificial; UE; soberania digital, China-EUA; competição regulatória; geopolítica.

“And some say that the Chinese have all the data and the Americans have all the money. But when I see what we have going for us in Europe, it’s that we have purpose”.

Margrethe Vestager

(Joint Committee Hearing, Europe Fit for the Digital Age)

European Parliament, 2019a.

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ABBREVIATIONS AND ACRONYMS

AI – Artificial Intelligence

AGI – Artificial General Intelligence

ANI – Artificial Narrow Intelligence

EU – European Union

FTC - Federal Trade Commission

GAFAM – Google, Amazon, Facebook, Apple and Microsoft

GDP – Gross Domestic Product

GDPR – General Data Protection Regulation

HLEG - High-Level Expert Group on AI - European Commission

IEEE - Institute of Electrical and Electronics Engineers

IoT – Internet of things

IPO – Initial Public Offering

ISO - International Organization for Standardization

MEP – Member(s) of the European Parliament

NATO – North Atlantic Treaty Organization

NGO – Non-governmental organization

NIST - National Institute of Standards and Technology

NLP – Natural Language Processing

UN – United Nations

US/USA – United States of America

WEF – World Economic Forum

WTO – World Trade Organization

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INTRODUCTION

Artificial Intelligence (“AI”) is a subject frequently associated with futurism, a kind of “uncharted territory” littered with opportunities and challenges. Increasingly, digital technologies are becoming a fundamental part of our lives, and at the same time, these technologies are also evolving at a growing pace.

AI has the potential to revolutionize different spheres of human existence, from agriculture, health, the economy, and justice, as well as the regulatory frameworks that are the subject of this essay. It is reasonable to assert that AI will radically change life on our planet, although it is still fairly uncertain as to how exactly this will come into being.

This is a general prediction that was initially put forward by Klaus Schwab in 2016, then chairman of the World Economic Forum in his work “The Fourth Industrial Revolution”. Schwab describes that a series of recent technological advances are starting to fuse the biological, physical and digital domains, giving rise to disruptions that may pose “great promise and great peril” (WEF, 2022).

Moreover, in a recent open letter, Microsoft founder Bill Gates proposes that AI development is as critical as the invention of the microprocessor, the internet and mobile phones, and that “it will change the way people work, learn, travel, get health care, and communicate with each other. Entire industries will reorient around it. Businesses will distinguish themselves by how well they use it” (GATES, 2023).

Due to the very nature of industrial revolutions, to overcome and rapidly advance knowledge in a multitude of sectors, society is faced with a very important question of how to best extract the benefits and avoid the drawbacks of nascent AI applications. As in previous revolutions, AI brings about great challenges and unpredictable consequences by rapidly developing the scientific and technological frontiers, and in turn creates a gap in relation to law and

society, with far-reaching impacts on our modern economy as well. However, AI noticeably adds a new variable to the equation because it enables machines to learn and produce new knowledge, sometimes without direct assistance or guidance from a human (STRAUS, 2021, 142-143).

AI is arguably one of the most important topics discussed today in the technological sphere, lying at the intersection of diverse disciplines ranging from Law, politics, science and technology. This work aims to concentrate the discussion in the field of International Relations, contributing to a growing scholarly literature dedicated to AI, sovereignty, geopolitical regulatory competition and EU policy.

The EU is one of the world's pioneers in regulating AI through an ethical and human-centered approach, carved around its core tenets: the rule of law, fundamental rights and democratic principles. However, as will be analyzed ahead in this essay, the EU seems to be lagging behind its main competitors on the world stage: the US and China. Despite a strong research base and an economically powerful Single Market, the EU faces some level of deficiency in external investment, talent retention and competitiveness of its AI industry.

In recent years, data and technology have increasingly become essential elements to understand the current EU's regulatory and development priorities, as reflected in senior political discourses and proposed legislation (BELLANOVA *et al*., 2022, p. 337). Following a series of events further explained in this work, the EU began to prioritize AI development and regulation as a major priority goal, aligned with the objective of achieving "strategic autonomy" over several other key areas.

By prioritizing ethical and human standards for the use and development of AI applications, under its core foundational principles as an added market value, the EU is looking to distinguish itself in the great-power competition posed by China and the USA. As well as to leverage its market and normative power to

export this proposed regulatory model to other parts of the world. Effectively, the EU is keen to cooperate when it is possible and to compete when it is necessary to expand its influence on global standards to AI far beyond the Single Market.

The EU ambitions to be a leading world player with its unique approach to technology, scaling up research and innovation, boosting investments, coordinating Member-States' national strategies and exploring innovative regulatory avenues to ensure a responsible and trustworthy AI as its flagship trademark. This aspiration is consistent with the EU's objective to achieve "strategic autonomy", capable of standing for its interests, defending its citizens and empowering itself as a geopolitical actor in its own right (FRANKE, 2021, p. 9; CALDERARO; BLUMFELDE, 2022, p. 1-2).

However, the EU's claim of achieving "strategic autonomy" over AI is problematic for several reasons that will be explored ahead in this essay. To prelude this discussion, it is necessary to remark that the EU's quest for "strategic" autonomy has often been associated with achieving technological sovereignty over AI (BARRINHA, CHRISTOU, 2022, p. 356).

Although strategic autonomy and technological sovereignty are terminologies increasingly employed by the European politburo, the EU is not a sovereign entity under the traditional state-centric conception. This raises the burning question of how the EU plans to put into practice an ambition to be sovereign over AI when at present the EU is not a traditionally sovereign entity, not even a state.

This essay raises the following main research hypothesis:

The EU can fulfill its ambition of influencing global AI standards as a digital sovereign in a scenario of regulatory competition with China and the USA.

The main research hypothesis is derived from the following starting questions:

Considering the EU's ambitions for AI is associated with achieving technological (or digital) sovereignty, what does it mean to be a digital sovereign?

Can the EU become sovereign over AI without actually possessing traditional state sovereign prerogatives? And what are the implications of such a claim?

In regard to regulatory competition, what do great powers to reinforce (or challenge others') digital sovereignty (by regulation or the lack of it), and how is this a competition?

In order to investigate those propositions, this essay delves into the theoretical framework of sovereignty, and more specifically digital sovereignty, in the fields of political science and international relations. The research hypothesis is explored by studying the contested proposition of EU digital sovereignty with support from historical concept developments, the inherent challenges to classical and post-modern sovereignty interpretations, policy and political discourse analysis from EU's senior leaders.

As well as by studying if there is a competition for AI regulation, in which ways the EU proposes to set itself apart from the Chinese and American rival regulatory models and whether the EU's ambitions to lead and influence global AI standards are achievable.

This work will also analyze in a critical thought the elements that compose a proposal for digital sovereignty, as well as the reasons that drive the EU to pursue it, backed by the historical construction of sovereignty discussed ahead.

By retracing the evolution of sovereignty from Bodin to the post-traditionalist approach, we attempt to demonstrate that sovereignty is a performative political discourse rather than a purely legal and organizational concept as traditionally advocated. Later on, this discussion will be employed to anchor one of the main conclusions of this study: that the digitally sovereign EU is a performative discourse of claiming to be sovereign.

Hence, this work aims to take part in the emerging scholarly discussion on the proposition of the EU as a technological sovereign, by offering analytical contributions on the conceptualization and implications of such a sovereignty model. This discussion is held against a background of a regulatory competition with China and the USA, in which the EU's normative influence (or power) over such players is debated.

To reach those objectives, and with methodological support from Lamont (2015), this work is a question-based research of interpretive nature based on document and discourse analysis. More specifically on the question-based model, this study proposes to observe a set of explanatory variables (research questions) to dive into the research subject and find answers to them.

The interpretive method (LAMONT, 2015, p. 35) is present considering this research intends to explore the underlying meaning of the EU’s digital sovereignty applied to the context of AI and regulatory competition. Digital sovereignty, and especially for the EU, is a contested claim in the literature.

Therefore, we explore it by tracing back the roots of the concept of sovereignty, how it evolved over time and investigate if at this point in history we can argue that sovereignty could be exercised by the EU for the purpose of influencing global AI standards. Even though the EU is not a state and does not fulfill classical requirements to do so.

Furthermore, the research design is of a case study considering we propose to explore the research questions in a scenario of regulatory competition between three global powers. In this regard, the competition scenario as a case study effectively provides a testing ground for the research hypothesis, mainly considering that the sovereignty of the US or China is not disputed, unlike the EU's. Therefore, the case study research design promotes an analytical counterpoint to perform such analysis on sovereignty between the three global powers.

Therefore, by framing the hypothesis inside the case study of regulatory competition, we can thus test the former. As Lamont (2015, p. 149) describes: a "(…) case study [of interpretive nature] should be designed around how closely your object of study relates to the phenomena you wish to understand".

We employ a discourse analysis to investigate the meanings and roots of sovereignty, as well as a comparative framework analysis when debating the regulatory competition with the US and China as differentiating aspects from the EU.

This essay employs the qualitative method by collecting and analyzing non-numerical data (LAMONT, 2015, p. 124) through the use of primary and secondary information sources (LAMONT, 2015, p. 127), mainly documents, academic essays, articles and official government policies.

The state of the art is comprised of documents and official policies from the EU, China and the USA. Furthermore, we investigate academic literature from researchers and policymakers, mainly from Europe, with the scope of AI, digital sovereignty and regulatory competition.

The work is organized into six chapters. Chapter 1 addresses the current technological progress of Artificial Intelligence. The importance of this chapter comes from defining AI as essential to clarify the object upon which digital

sovereignty is articulated and the regulatory competition plays out. We also raise the possible future scenarios for AI along with social and legal concerns.

Chapter 2 delves into the discussion on the evolution of sovereignty. Backed by the historical progress of this concept, the discussion gradually progressed until modernity (20th century). In the end, this chapter introduces the proposal of the sovereignty applied to the digital, its dilemmas and inherent challenges, as we argue that sovereignty does not carry just one meaning, but it is a changing concept that draws value from and depends on historical periods and fields of study

Chapter 3 introduces context and an overview of the EU's aspiration to become a "strategically autonomous" entity over AI. It lays the groundwork to understand attempts to reconcile EU sovereignty with the digital element. Later on, we propose a conceptual leap on sovereignty under the post-traditionalist academic school of thought, in order to realize sovereignty as a performative political discourse, which suggests the establishment of a new way of how sovereignty is practiced. Finally, the EU's normative power (or "Brussels Effect") is discussed as a way to further explore the European influencing power.

Chapter 4 addresses AI regulatory competition. First, we investigate a selected number of issues calling for AI regulation. Then, we move on to explore the definition of regulatory competition and propose a way to frame this subject in the AI field. Finally, the debate is centered around the reasons that foster AI regulatory competition. Essentially for this essay, regulation appears to provide assurances to the public, government and stakeholders regarding the risks of AI, and that also promotes its ethical and safe use, establishing best practices and sanctions for infringers.

Chapter 5 explores the different regulatory approaches to AI by the EU, China and the US, first with an overview and afterward with individual analysis and a comparative study. By delving into the strategies of each entity, this essay

consolidates its analytical comparative proposal of AI frameworks, most notably on the EU's differentiating approach to AI. This work offers insights into how these different strategies compare to each other, underscoring the EU's ambition to influence global AI standards.

Chapter 6 offers concluding remarks on the subject and suggests future avenues of investigation. Essentially, we mark a final point in analyzing the comparative framework of regulatory competition for AI, highlighting the distinctive EU approach rooted in human-centric and ethical concerns as a driver of the European agenda to influence global standards far beyond the Single Market.

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1. AI: PRELUDE

1.1 Overview of the technology

To reach the core of this research and to understand the object upon which the regulatory competition hypothesis falls, we must first explore a brief history of Artificial Intelligence and the current state of the art of the technology.

On a very basic level, Artificial Intelligence refers to building machines that can execute functions usually expected to require human intelligence (ANDERSEN, 2002). Its origins can be traced back to the work of the American computer scientist John McCarthy in 1955, widely credited as the author of the expression “Artificial Intelligence” (SCHERER, 2015, p. 360; GURKAYNAK *et al.* 2016, p. 750). To whom AI is “the science and engineering of making intelligent machines, especially intelligent computer programs” (MCCARTHY, 2004).

At the beginning of the 20th century, the Artificial Intelligence landscape was taking shape with the first ideas of intelligent machines. During this period, Alan Turing[1] and other computing pioneers began to explore fundamental concepts of universal machines and algorithms that would play a crucial role in the subsequent development of AI (POPKOVA & GULZAT, 2020).

[1] Turing is a renowned character in the field, celebrated as one of the “founding fathers” of modern computing. Turing asked a simple yet complex question of whether machines can think. More specifically, he proposed a game in which an interrogator sits in one room separated from one person and one machine, initially identified simply as “X” and “Y”. The purpose of the game is for the interrogator to determine which is one. For that, the interrogator might pose questions to each entity and try to assess their identity. The objective of the machine is to confuse the interrogator as being the person, and the person’s objective is to help the interrogator to correctly identify the machine. It was dubbed “The Imitation Game”.

However, it is important to note that in the early decades of the 20th century substantial technological limitations restricted the practical implementation of the visions of Turing and other pioneers. Computers of the time were complex mechanical devices with very limited computational capabilities if compared to modern ones (WALSH, 2017). Processing power was extremely scarce, and data storage was a significant challenge. This meant that AI ideas were largely theoretical and could not be effectively implemented in real systems (JORDAN, 2019).

In addition, the absence of advanced sensor technologies and the lack of massive digital data also limited the ability to train AI algorithms. Modern AI relies heavily on the availability of large volumes of data to train machine learning models, something that was far from being achieved in the early decades of the 20th century (REYES & MARUYAMA, 2019).

It was only in the last two decades that Artificial Intelligence has entered a period of remarkable advances, setting the tone for a radical transformation in the global technological landscape. This progress has been driven by a convergence of critical factors to create the right conditions for AI to flourish, marking the beginning of a new era of practical and effective applications (CRAFTS, 2021).

One of the main reasons for the rapid progress of AI is the exponential growth in computing power. During previous decades, computers were limited in terms of processing and storage capacity (POPKOVA & GULZAT, 2020). However, the emergence of supercomputers and the constant improvement in processor efficiency allowed machines to process data at speeds way above the average human.

This has provided the technical foundation needed to tackle complex AI tasks that were previously unattainable (MATTHEWS *et al.*, 2021). In addition, the evolution of algorithms has played a crucial role in this progress. As AI researchers refined their techniques, developing increasingly sophisticated

algorithms that allowed AI systems to learn and adapt from data (JORDAN, 2019).

These technological advances have revolutionized the ability of AI systems to learn and adapt. As machines are exposed to more data, they improve their skills and deliver better results. This has opened doors to a range of practical applications in fields as diverse as healthcare, finance, transportation, education and entertainment (POPKOVA & GULZAT, 2020).

The 21st century has witnessed the dramatic rise of Artificial Intelligence as a ubiquitous and transformative force that has penetrated several aspects of society. AI has ceased to be a distant promise and has become a tangible reality, redefining the way we interact with technology and shaping the world in many different ways (WALSH, 2017).

One of the most significant milestones in the development of AI in recent decades has been the progress in the field of Natural Language Processing (NLP) (TEIXEIRA, 2019). NLP focuses on the ability of machines to understand and process human language, including writing and speech. This breakthrough represented an important turning point, opening doors to a series of transformative applications that are now part of everyday life (CRAFTS, 2021).

These advances in NLP have had profound impacts on everyday life. One notable example is the proliferation of virtual assistants, such as Apple's Siri, Amazon's Alexa and Google Assistant, which respond to voice commands and perform a variety of tasks, from answering simple questions to controlling smart home devices (MATTHEWS *et al.,* 2021). Virtual assistants can interpret and respond to natural language in an unprecedented way, making interaction with

technological devices and services more intuitive and accessible (REYES & MARUYAMA, 2019) [2].

One other domain in which AI has had a significant impact is healthcare. From more accurate medical diagnoses to personalized treatments and drug discovery, AI is revolutionizing the medical care approach (CRAFTS, 2021). Machine learning algorithms are trained on large volumes of medical data, allowing the early identification of diseases, the optimization of treatment protocols and the acceleration of biomedical research (MATTHEWS *et al.,* 2021).

In the transportation sector, AI plays a key role in advancing autonomous driving, where leading car companies such as Tesla have developed AI-based autopilot systems that can autonomously control vehicles in various traffic conditions (LEE, 2019). This promises to improve road safety, reduce congestion and even fundamentally change the way vehicle ownership is practiced (POPKOVA & GULZAT, 2020).

In finance, AI is used for real-time data analysis, fraud detection and investment decision-making. AI algorithms can quickly analyze vast volumes of financial data, identifying trends and opportunities that would be almost impossible for humans to detect. This poses significant implications for global financial markets and risk management (JORDAN, 2019).

In entertainment, AI is present in lives in many ways, from personalized content recommendations on streaming platforms to the creation of video game

[2] Another relevant application of NLP is machine translation, which has evolved significantly in terms of accuracy and fluidity. Tools such as Google Translate allow people to communicate in different languages without the need for language proficiency, which has a profound impact on global communication, international trade and access to information (JORDAN, 2019). Advanced chatbots are another manifestation of NLP. This AI software is able to hold text conversations with users in a natural way that it is often difficult to distinguish between a chatbot and a human being. This poses applications in customer service, technical support and even online psychotherapy (POPKOVA & GULZAT, 2020).

characters and high-quality special effects in films and animations (REYES & MARUYAMA, 2019). AI algorithms can understand consumer preferences and behaviors, delivering more engaging and relevant entertainment experiences.

1.2 AI's development stepstones

The computer science academia presupposes three main development levels (or stepstones) of Artificial Intelligence (CARRIÇO, 2018; GURKAYNAK *et al.,* 2016). The first is the Artificial Narrow Intelligence ("ANI"), which refers to applications specialized in a specific task, mainly using machine learning and deep-learning tools.

This level of AI has been present for a considerable time such as in Google's search engine. One of those applications called Deep Blue won a match against chess champion Garry Kasparov in 1997, widely publicized at that time. In 2016, it was the turn of Google's DeepMind to win a match against the number one player of Go, considered one of the world's most complex games (BBC, 2017).

ANI applications, however, are limited to a specific set of tasks and do not match the human skills of tackling virtually any type of problem we encounter in everyday life. Despite the ability to process large amounts of data at unimaginable speed for a human, ANI applications carry a tight set of programming instructions, outside of which it cannot perform well or do not perform at all.

Ironically, ANI machines such as DeepMind are not actually "aware" of playing a game and, thus are not capable of answering child-like questions such as "Can humans fly?". On this topic, Harvard psychologist Steven Pinker rightly points out that: "[t]he main lesson of thirty-five years of AI research is that the hard problems are easy, and the easy problems are hard" (2007, p. 191).

It is important to note that despite the segmentation of three levels of AI development, current technology still rests on the first and most basic one, the ANI. Even supercomputers, with massive calculation capacities, by far exceeding the average human, cannot outpace the boundaries set by their creators while coding their software (GURKAYNAK *et al*., 2016, p. 751).

With this in mind, leading tech companies are advancing research projects intended to create AI machines capable of being aware of their environment and more adapted to human thought processing. Examples of these trials are underway, such as neural networks and deep learning, which puts the technology closer to the human capacity to process information.

Machine learning, for instance, is a method for processing data autonomously in the form of an analytical data model. Using this method, algorithms learn from data by continuous interaction, enabling the computer to find occult patterns and insights without being formally programmed to do so (JANIESCH *et al*, 2021, p. 686) [3], thus overcoming current limitations of ANI machines.

The second development level is the Artificial General Intelligence ("AGI"). It refers to applications capable of reasoning and understanding their environment, employing their intelligence on any type of task instead of a limited set of problems, such as it happens with ANI (CARRIÇO, 2018; STRAUSS, 2021; GURKAYNAK *et al.,* 2016). At the moment, this is only a theorized stage [4].

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[3] This method has been advanced to a more granular stage called deep learning, empowering machines "to learn from experience and understand the world in terms of a hierarchy of concepts" (KIM, 2016, p. 351). In which the first layers learn basic features from the extracted data, and the higher layers learn more complex features, but built upon the transformative output of those first layers (SHINDE; SHAH, 2018).

[4] One example can be taken from the fiction of cinema, the *Hal-9000* computer from Stanley Kubrick's *2001 – A Space Oddisey*. Which is capable of talking to passengers, controlling the spaceship, its equipment and monitoring the mission's objectives, almost seamlessly in comparison to what humans would do on a mission of this kind. *Hal-9000*'s behavior sparks a comparison with the Artificial Neural Network, which is a form of processing information similar to that of a biological nervous system, as the brain is. In essence, this method is composed "of a

Under this level, AI applications would - in theory - possess autonomous capabilities to solve complex problems in several different areas of knowledge. It represents a step forward as it might bring the technology up to a level of tackling problems involving emotion, anticipation and human behavior.

It is still unclear when this stage of development can be achieved. Part of the AI developers' community believes it could be reached by 2030, others are convinced it will not be completed before the end of this century. It is fair to assume we still miss several technological leaps to see it happening. On the other hand, a part of scientists in the field predict that once we have achieved the AGI level, it will not be long before we can also reach the next stage of evolution. This rapid progress is dubbed by the scientific community as an "intelligence explosion" or "technological singularity" (YUDKOWSKY *et al*, 2010, p. 1).

The third and last stage of AI is Artificial Superintelligence, a type of machine that could outperform humans across the board, "including scientific creativity, general wisdom and social skills" (BOSTROM, 2003). However, it is fairly uncertain how would that machine come to life. Taking into account that we have not even reached the intermediate level of AGI, it is unclear which technological leap could bring about the birth of a superintelligence machine.

2. INVESTIGATING THE PILLARS OF SOVEREIGNTY

2.1 Scope

AI has become of strategic importance for governments and companies around the world, considered one of the most transformative forces of our time (SMUHA, 2021, p. 1). Recent advances in its industry created strong incentives

large number of highly interconnected processing elements (neurones) working in unison to solve specific problems" (SIGANOS, STERGIOU, 1996). By using it, the computer is able to adjust the synaptic connections between the processing elements similar to neurons, enabling it to learn adaptively and by example, just like humans do.

for nations around the globe to propose regulations on how to best manage the benefits and mitigate the risks of this nascent technology (ROBERTS, 2022, p. 1). And that includes the European Union.

To reach the main theme of this paper and better understand the EU's capabilities of normative and regulatory influence in the scenario of a geopolitical dispute between the USA and China, it is first necessary to trace back the origins of the concept of sovereignty and then to scrutinize the proposition of sovereignty applied to digital.

What does it mean to be a digital sovereign? Then, how could the EU become one and what are the implications of such a claim? This paper will also analyze in a critical thought the elements that compose a proposition of digital sovereignty, as well as the reasons that drive the EU to pursue it, backed by the historical construction of sovereignty discussed ahead.

By retracing the evolution of sovereignty from Bodin to the post-traditionalist approach, we attempt to demonstrate that sovereignty is a performative political discourse rather than a purely legal and organizational concept that is usually thought of. Later on, this discussion will be considered to explore the possibility of the EU akin to a digital sovereign.

Hence, this work aims to take part in the emerging scholarly discussion on the proposition of the EU as a technological sovereign, by offering analytical contributions on the conceptualization and implications of such a sovereignty model. Especially by highlighting the geopolitical disputes and the scope of the EU's normative influence (or power) over other players in the international community.

2.2 Classical sovereignty

To begin the study of sovereignty, it is clear - as some scholars have pointed out (BARRINHA, CRISTOU, 2022, p. 357) - that this concept has been and still is under debate. Although it is a key element in understanding the State, the Law and international relations, sovereignty is still a "confusing, disputed and opaque" concept (GAMMELTOFT-HANSEN et al., 2008, p. 3). Werner *et al.* (2001, p. 285) point out that many authors have even declared sovereignty to be "factually incorrect, obsolete and dead".

In this sense, it is reasonable to argue that sovereignty does not carry just one meaning, but it is a changing concept that draws value from and depends on historical periods and fields of study. Richard Falk (2001) rightly points out that the concept of sovereignty is absorbed by a "conceptual migration", and that in different historical contexts there have been different problems and needs, which in turn have fostered different concepts of sovereignty. To illustrate this thought, Winston Nagan and Craig Hammer have listed 16 possible meanings of sovereignty in one of their works, each corresponding to a context or field of study [5].

It should also be noted that sovereignty is one of the most important themes in studying the modern state and international law, so it is understandable that the issue over time has been the subject of heated debates. According to Samantha Besson (2011), the endurance of sovereignty in contemporary legal discourse has even increased due to the frequent disputes and controversies surrounding its precise meaning.

[5] The authors justify their understanding: "*The term is widely used -and not always used in the same way by scholars, journalists, practical politicians, international civil servants, jurists, and others from widely divergent cultural traditions, professions, and intellectual disciplines. It may mean different things to different people living in different cultures throughout different periods (historically and contemporaneously) who practice (and practiced) different specialized or professional competences. It may have different meanings in jurisprudence, political science, history, philosophy, and other related fields"* (NAGAN, HAMMER, 2004, p. 142-143).

Sovereignty is understood both as the independence of one state from another (external sovereignty) and as the absolute jurisdiction over relations within the territory of that same state (internal sovereignty). When associated with democracy and the rule of law, this concept encompasses the exercise of citizens' inalienable rights in favor of self-determination (POHLE, THIEL, 2020, p. 3).

From the perspective of the internal legal system of a given state, sovereignty is defined positively as the supreme state's power to decide relations within its territory, separating it from all other people (natural or legal), who are the subjects of law, the target of sovereignty. From an external perspective, based on international relations, sovereignty is only negatively defined, consisting of the absence of subjection to another power/state. This means that all states, at least from the normative point of view of international relations, are equally independent of each other, a principle that was one of the foundations of the 1945 United Nations Charter (CHRISTAKIS, 2020, p. 11).

Bellamy (2017, p. 191) states that the sovereign is the one who decides a matter, who has the last word and also has broad jurisdiction over the object of power. Someone whose authority prevails over other sources of power, so that their decision is final on a given subject. The author continues to describe that sovereignty is composed of 4 different elements: territory, regime, ruler and the people, all of them interacting in different ways, the product of which is the idea or concept of sovereignty.

In this sense, the celebrated author of International Relations, Hans Morgenthau, makes a good point:

> *"In any state, democratic or otherwise, there must be a man or a group of men responsible for the exercise of political authority. Since in a democracy the responsibility lies dormant in normal times, barely visible through the network of constitutional arrangements and legal rules, it is widely believed that it does not exist (…). Yet in times of crisis and war that ultimate responsibility asserts itself… and leaves to constitutional theories the arduous task of arguing it away after the event" (MORGENTHAU, 1948, 344 apud BARTELSON, 1995, p. 27).*

Raymond Aron (1967, *apud* FOWLER *et al.,* 2010) sums up the issue when arguing that sovereignty is “the supreme power of deciding in a case of crises (…) the search for conditions in which an authority is legitimate and of the place, men and institutions in which it resides”.

In normal times, when state jurisdiction and powers are not challenged, whether by internal or external actors, sovereignty seems almost an unimportant concept. However, in tumultuous periods, when conflicts occur or the existence of actors competing for power and authority prevails, likely, the very concept of sovereignty will also be redefined and disputed.

This was the case at the time of Jean Bodin and Thomas Hobbes (16th and 17th centuries), as well as Carl Schmitt (20th century), authors that are discussed below. During those historical periods, the state's power to resolve conflicts and remain independent of other powers, or even the appearance of how this power is exercised, became a fundamental element in the evolution and end of such conflicts.

Sovereignty has been present since antiquity, passed down through the ages from the Roman law. However, its concept made great strides in the 16th century with the emergence of the Nation-State. It was under the writing of Jean Bodin, in his work *Les Six Livres de la République* (1576) that sovereignty began to be redefined amid the growing tensions and conflicts that permeated that century.

In Bodin’s time, conflict and turmoil are represented, among other examples, by a civil war in France between the Calvinists and the Catholic monarchy. According to Daniel Philpott (2020), Bodin was the first author to systematize the concept of sovereignty in modern European philosophical doctrine, "deserving a landmark status".

In this respect, the new model of state also represents a new stage in the semantic definition of sovereignty, although it is always changing, as will be studied ahead. The definition of this concept became important to strengthen the state and also to define who would be responsible for resolving the numerous conflicts of the time, especially religious ones, given the existence of multiple actors vying for power.

Leading figures of this period, such as Jean Bodin, considered that sovereignty was the element that differentiated the prince (the ruler of the state) from other sources of authority, both internal and external to the state itself. Bodin, in particular, argued that sovereignty is absolute, without limitations in terms of power, function or period of time, nor could it be divided between authorities. In addition, the author sought to define sovereignty in a way that was not linked to a specific state, which brings his work closer to a school of philosophical analysis of sovereignty (BROWN *et al.,* 2002, p. 260-261).

It was through Bodin's work that this institute took on different qualities from those present in medieval times. Sovereignty was separated from the person exercising it (the sovereign) and became the symbol of the Republic's perpetual and absolute power, limited only by natural law (BESSON, 2011). Raffaele Bifulco and Alessandro Nato (2020, p. 8) deduce that Bodin structured a system “that is independent of the outsider and superior to everything and everyone inside”.

However, with no disregard for Bodin’s work, the modern meaning of sovereignty is generally attributed to the Treaty of the Peace of Westphalia[6] of

[6] Samantha Besson (2011), warns, however, that this is an oversimplification in historical terms. She deduces that sovereignty was established well before 1648 and continued to be questioned even after the said treaty. In another angle, Werner et al. (2001) argue that the Peace of Westphalia is generally mistaken as having established isolated, self-sufficient states. That in fact it was a consensual solution to the common perception that the borders between states were permeable, and that interdependence between powers was inevitable. Due to these factors, it was then born the need for a mediated solution to wars and conflicts, besides brute force only

1648, almost a century after Bodin's *Les Six Livres de la République*. It was through this instrument that the principles of territorial demarcation of state authority were established, as well as the non-intervention by sovereign states over others. It is worth noting that the secular authority of the state also became absolute and independent of religious authority.

It was with the publication of Thomas Hobbes' Leviathan in 1651 that the concept of sovereignty took another interpretative leap. Published only a few years after the execution of King Charles I in 1649 as a result of the English Civil War, Hobbes thought sovereignty originated from an abstract bond between the people (called the social contract). Out of this bond, the figure of supreme authority (the Leviathan) would emerge, allowing the people to achieve security and the end of civil wars in exchange for limiting their actions.

By further delving into Hobbe's work, the Leviathan represents an abstract notion of the state to whom the people would transfer all of their rights (Philpott, 2020). In this sense, the state (under the guise of the Leviathan) makes supreme decisions representing the will of the people, limited only by natural law. In this sense, this personification of authority remained above its laws, and those under its jurisdiction had an absolute duty of obedience.

The theory of sovereignty linked to a social contract was further developed by other classical authors such as John Locke. Locke wrote that sovereign authority originated from a contract not amongst the people as Hobbes imagined, but directly between the people and their sovereign. This change of thought would mean that the sovereign would be directly accountable to the people if the social contract or individual rights were violated (BESSON, 2011).

In this regard, and contrary to the thought of Bodin and Hobbes, Locke established a form of control over sovereign authority to ensure the division of powers and constitutional check, institutes that at this period were still being

developed. The sovereign thus becomes a source of power, but at the same time must obey the rules issued by themselves.

Turning to the 18th century, it was the time for Jean-Jacques Rousseau to redefine the focus on popular sovereignty, in a form that authority would derive from the common will of the people, instead of a monarchical sovereignty written about by Bodin and Hobbes. In Rousseau's conception[7], If the sovereign violates the will of the people, fails to serve them or fails to comply with the social contract that binds them to the people, the sovereign would be doomed to lose their sovereign powers. We can thus see the establishment of a close bond between sovereignty and democracy that survives to this day, albeit altered as a result of the events that followed history. This seems to be in line with Falk's (2001) theory of "conceptual migration".

Moving on to the 19th century, it was from this period forward that sovereign prerogatives of international law (the external aspect of sovereignty) were effectively put into practice and scholarly defined. It came alongside the consolidation of nation-states and international law itself when it was prescribed that all states were sovereign *vis-à-vis* each other, eliminating – in theory - subordination ties amongst them [8].

In this regard, Besson (2011) argues the external sovereignty aspect necessarily implies a limitation on the sovereign state upon the emergence of

[7] From Rousseau's work, it is possible to note the beginning of a separation of the object of sovereignty (which is divisible and controllable) from the principle of sovereignty (which remains indivisible). Rousseau well perceived the evolution of these two elements when he wrote that: (…) If we examine the other divisions in the same manner, we should find that, whenever Sovereignty seems to be divided, there is an illusion: the rights which are taken as being part of Sovereignty are really all subordinate, and always imply supreme wills of which they only sanction the execution (ROUSSEAU, 1762, p. 12)

[8] It is worth noting that classical authors such as Machiavelli, Bodin and Hobbes also considered the external aspect of sovereignty, but the 19th century seems to mark the turning point in the importance and conceptual definition of external sovereignty. Since there was no sovereign global authority, states themselves were encharged of finding an agreement to recognize each other as sovereign, as well as to structure international rules to resolve conflicts between them.

international law. This is because the full exercise of sovereignty (internal and external aspects) depends on the state's submission to international law. And for international law to be created, independent states must have consented to the establishment of mutual rules to resolve conflicts between them. This way, Besson concludes, even if a state is not limited by its internal legislation or framework of rules, it could be limited by the collective force of the international community, under the framework of international law.

From that point forward, with the recognition of both dimensions of sovereignty, international law began to take roots alongside the development of norms that regulated coexistence between sovereign states, covering issues such as borders and trade disputes, as well as protection against interference by one state in the internal affairs of another. Agreements were then put into writing (codes) and the first international organizations emerged, within which states were able to organize their interests in a regularly collective manner.

2.3 Modern state sovereignty

The wake of the 20th century is generally recognized as the time when the rules of modern international law were firmly established. In the first half, the Hague Conventions of 1899 and 1907 were signed, laying down rules for war on both sea and land. The League of Nations was established in 1919 and the Paris Agreement (or Kellogg-Briand) was also signed in 1928. Those were the first attempts to curb the use of brute force to resolve conflicts after the First World War. Although these initiatives were unable to prevent the outbreak of a new globalized war in 1939, they reflect the growing aspirations of the international community to achieve lasting peace.

The first half of the 20th century was also marked by the dissolution of the normative concept of sovereignty, detaching it from the “external anchors” that had imbued it with value since Locke's classical doctrine, similar to a return to the definitions of Bodin and Hobbes. In this sense, sovereignty continued to be a

quality of the state but without any moral, political or philosophical ties. This school of thought is present in the thinking of legal scholars of this period such as Hans Kelsen, and above all Carl Schmitt.

For Hans Kelsen, sovereignty is a normative legal concept and, in his thought, the legal system is based upon a self-sustaining legal hypothesis. This sole premise is known as the "basic norm", which prescribes obedience to the legal order. In this sense, there is no external factor moderating sovereignty in Kelsen's conception, as is the case for example with classical writers such as Rousseau, for whom philosophy and morality shape the discourse around sovereignty.

From another angle, Carl Schmitt[9] is part of the school of political realism, alongside figures such as Nicolau Machiavelli and Thomas Hobbes (CALHEIROS, 2021, p. 3). His influence on the renowned author of the realist school of International Relations, Hans Morgenthau, is still debated.

Schmitt did not consider himself a political or international relations theorist, as his work was centered around the study of law and jurisprudence, in the wake of the German constitutionalist school at the beginning of the 20th century. His contemporary peers included emblematic legal figures such as Friedrich von Savigny, Rudolf von Jhering, Georg Jellinek and, perhaps most famously, Hans Kelsen (ORSI, 2017, p. 11) [10].

[9] William Hooker (2009) sums up the debate on Schmitt that there is a conflict between those who consider him "an arcane and reductionist Nazi who has little to offer". And those who, while recognizing subversive characteristics in his work, see at least some potential of recovering it. This creates a division between two scholarly lines of thought that separates those conducting an "exhumation process" of Carl Schmitt and those who "wish to keep him buried".

[10] Schmitt approaches the state from the perspective of a crisis embedded in historical change and the consequent fate of political communities, based on primordial concepts of justice and law. There is also a notable intersection with the theological and sociological thought that was circulating in the academic corridors of his time, namely Max Weber and once again Hans Kelsen (the latter from his work *God and the State*).

It is important to highlight the reactionary nature of Schmitt's literature concerning the geopolitical changes of his time. The belief in the centrality of the state as the main actor in international relations began to be shaken from the end of the 19th century, but above all after the Treaty of Versailles and, later, with the end of the Second World War. This was due to the establishment of an era of neutralization of state power, in which power began to be disputed by non-state actors and the concept of sovereignty was weakened (CALHEIROS, 2021, p. 4).

Schmitt sharply criticizes the liberal tendency to bend the political element to the rule of law as a way of escaping conflicts, hiding behind liberal normativism and legal formalism [11]. According to Schmitt, the systematic theory of liberalism refers almost exclusively to the internal struggle against state power, acting as a farce that attempts to "depoliticize" the state, and which only temporarily masks the struggle that defines the political through non-political language (KURYLO, 2016, p. 3).

When opposition within the concept of the political calls into question the state, the customs and the lifestyle of communities, to name a few examples, a state of exception is created, in which it is up to the so-called sovereign, in Schmitt's view, to use tools and strategies to return order and normality. In a famous phrase, Schmitt concludes that "the sovereign is the one who decides on the state of exception" (ORSI, 2017, p. 6).

In this sense, it is essential for Schmitt that the state is independent of social or legal ties so that it can make the most important political decisions. The state in Schmitt’s view requires a strong leader who can channel the single will of the people and remove any internal opposition to the state's political plans. It is

[11] The German author also believes that the dominance of modern technocratic government will generate a neutralized and vegetative society by denying politics, that is, the existence of the struggle between groups, and by reducing political activity to private, economic or moral concerns (MCLOUGHIN, 2009, p. 143).

therefore not surprising that the image of Schmitt as the legal spokesman of the Third Reich persists [12].

It is worth noting that, at least in part, Schmitt's criticism of the disguise of the political in non-political language holds true in certain respects. This is because today's multilateralism in the words of UN Secretary-General Antonio Guterres is "(...) largely toothless, and sometimes, even when it has teeth, in the case of the Security Council, has little desire to bite" (*in* JORNAL ECONÓMICO, 2021, *own translation*). Taking action within the international community is voluntary, as it requires prior consensus. Thus, the current system is incapable of completely eradicating conflicts. Moreover, states still retain their sovereignty and are likely to disobey international rules when their benefit is at stake (KURYLO, 2016, p. 3).

2.4 Towards a post-modern sovereignty

It was precisely against the normative hollowing of the first half of the 20th century that a new system was inaugurated in the second half, more specifically in the decades after the end of the Second World War. For example, the United Nations Organization (UN) was established in 1945, and also the European communities, that preceded the European Union, were established between 1951 and 1957. At this stage in the development of international law, it can be noticed that the set of rules created in consensus by sovereign states began to allow them not only to coexist but also to cooperate (BESSON, 2011).

New global players of world reach began to have their roles recognized by states, especially international organizations. In addition, international law has also come to encompass a growing range of issues previously reserved solely

[12] On the other hand, Bernardo Calheiros (2021) argues that Schmitt is not an advocate of war and violence in politics. On the contrary, his desire was for order, and for order to be restored in the imminence of the conflict that pervades politics.

for national domestic law, such as rules on international trade, human rights, and more recently, migration and the environment. In addition, the horror of events of the Second World War, especially the Holocaust, was a powerful ingredient for the legal and institutional limitation of sovereignty.

The Universal Declaration of Human Rights was signed in 1948, a landmark with more than 30 individual rights that represent the embodiment of post-war pacifist desires. Although not legally binding, it was one of the first steps in bonding and limiting state action towards universally recognized principles by the international community.

Other examples followed, such as the 1948 Convention against Genocide and the European Convention for the Protection of Human Rights and Fundamental Freedoms. These norms are part of a movement to densify international conventions, which have started to prescribe greater limitations on the sovereignty of states, both internally and externally.

Authors such as Philpott (2020) and Bifulco *et al.* (2020) suggest that post-war developments have led to a redefinition of sovereignty, elevated to a post-modern or "post-Westphalian" concept.

It should also be noted that the legitimacy of domestic sovereignty has increasingly become linked to and dependent on the existence of a democratic and free regime in a domestic order. In this historical context, human rights began to be understood as minimal international standards, that need to be guaranteed by the international community against potentially violating states and non-state agents.

This is further illustrated by the fact that popular sovereignty has been internationalized on a global scale, in which the internal legal state order draws legitimacy not only from internal legal institutes such as the constitution but also from international law. Besson (2011) suggests that looking at the issue from

another angle, this means that sovereignty in the post-war period has shifted from sovereign states to sovereign people within states.

Another important observation is that with globalization, new transport and communication technologies and the deepening of economic interdependence on an international scale, certain state competencies, especially in matters of human rights, have increasingly been delegated to international organizations.

Equipped with these prerogatives, those organizations have become new fora for discussing and applying international rules, other than the delegating states themselves. One example is precisely the European Union, a supranational organization that rose from the ashes of World War II with the main objective of avoiding a new conflict on the European continent.

In this regard, Chantal Mouffe (2000) develops the concept of "post-politics" to refer to governance practices based on consensus rather than conflict, which is the basis for the liberalization of the international order. Essentially, the author advances the idea (also developed by other academics) that the balance of international relations comes from a consensus between states and that peace and cooperation bring more benefits than conflicts and wars.

It is certainly something possible to notice in the 21st century. Political and economic projects, such as the European Union, the establishment of partnerships, agreements and economic blocs are manifestations of the liberal project of eliminating war through cooperation. They are, in turn, based on the belief that globalization makes states gradually more dependent on each other, resulting in a homogenization of mentalities and priorities, political and social, private or public. This in turn – according to such a model - reduces the possibility of conflicts, especially armed ones.

This theory presupposes that all states are converted to liberalism so that everyone might live in peace and stability. This is the apparent ultimate goal of

liberalism, to achieve a "global state" without borders as written about by Francis Fukuyama in the celebrated work *End of History*.

2.5 The proposal for digital sovereignty

Having gone through the study on the nature and the changing meaning of sovereignty throughout history, we move on to analyze the proposal of a digital sovereignty to gain the analytical tools to study the EU as a digital sovereign over AI, as will be discussed ahead in this essay.

At first glance, the contrast of sovereignty over the digital seems to lead to a paradox. The evolution of the digital, especially through internet applications, seems to deny some of the main elements that compose sovereignty, such as territory and the hierarchical decision-making of a state. Digital environments seem to be dominated by the profusion of momentary interconnections, which can be changed at any given time. A prototype of a "lawless land", which no state could seize and thus be sovereign over the digital.

Essentially, the concept of "digital sovereignty" does not seem to correlate with the classic premises of sovereignty, namely the power to command and to decide internal matters (internal sovereignty) or the absence of submission to another state (external sovereignty).

The challenge of sovereignty applied to the digital traces back to the late 1990s, when the commercial internet was growing rapidly, along with the necessary infrastructure. But it was also when a discussion started about the power of the US a digital hegemon, capable of maintaining digital surveillance programs across the world, thus controlling digital activity. After 9/11, another discussion ensued on the power of the state to access personal data and digital communication without consent to ensure national security agendas (BELLANOVA *et al.*, 2022, p. 345).

Among the challenges arising from the concept of "digital sovereignty" applied to abstract and dematerialized cyberspace is the idea of exceptionality in the digital world. The main argument this trend of thought advocates is that the growing relevance of computer networks would lead to the fall (or relativization) of state sovereignty. It is based on the assumption that digital applications are qualitatively different and therefore need to be treated in an original way, different from all other previous technological innovations (POHLE; TIEL, 2020, p. 4).

It is also referred to as "cyber libertarianism" (KELLER, 2019), in the sense that the multiple uses of digital networks would lead to a decentralization of social control and organization, something for which states would be neither prepared nor suited. Proponents of this approach consider that virtual applications do not allow for some of the basic and classic prerequisites of sovereignty, such as a physical territory over which the state would be the absolute ruler, as well as centralized institutions that can exercise control and monitor law enforcement over digital networks.

A second challenge to sovereignty applied to digital networks came about in the year 2000 and relates to the proposition of multi-stakeholder internet governance. In this regard, digital space would be regulated by the users themselves in a decentralized model, agreeing on the common rules that would guide global networks.

However, in contrast to the first challenge of cyber exceptionalism in which the traditional sovereign state powers are perceived as weak in face of the digital, the collective governance argument advances a different idea. To maintain the internet (and other digital environments) a host of technical measures had to be implemented, based on expertise and decentralized decision-making processes, which supported the establishment of “shared norms, rules and procedures” (POHLE, TIEL, 2020, p. 5). This collective framework is ideally rooted in collaboration, openness and decisions and taken in consensus.

Nonetheless, the thinking of a collective governance model for the Internet faces several critics. One of the most notable is that states have continued to press for digital space and its technical measures to be regulated by multilateral organizations, and therefore putting the digital to some extent, in the scope of state sovereign controls. Furthermore, there is a clear lack of coordination between internet users regarding the creation of the new “social contract” for digital space.

Advances in communication infrastructures have made control and monitoring over the digital space somewhat easier (POHLE, THIEL, 2020, p. 4). From the second half of the 21st century onwards, the growth of GAFAM platforms gave birth to a more centralized internet, based around a handful of powerful tech companies, which in turn reinforces the possibility of state control.

Notably for this essay, China rapidly started countermeasures against the hegemony of the US by taking over critical national infrastructure that supports the digital realm. In this sense, China embraced a proposition of digital sovereignty that is indiscriminately associated with national security and territory (JIANG, 2010).

For instance, the “Great Firewall” of China, active since at least 1998, and the Russian attempt to mimic China’s initiative after the outbreak of the Ukraine war, are sounding examples of how governments can curb online access, mainly to Western platforms such as Google, Facebook and Instagram. These projects aim to prevent the dissemination of information deemed by authorities as a danger to the State. As a think tank fellow pointed out in an interview with Politico about Russia’s strategy to control: “[i]nternet control is not just about code. It’s also about the economy of fear and harassment and traditional coercion that the Kremlin weaponizes.” (quoted in BORDELON, 2022).

In essence, the libertarian utopia supposedly promised by the digital space is at the very least problematic to assert, given the encroachment of the state

over digital transactions and infrastructure. The ever-changing concept of sovereignty seems to have somehow accommodated itself to cyberspace, as will be seen in more detail ahead in this essay, especially in the context of geopolitical disputes, in which a three-pronged axis of power (the US, China and the EU) have begun a struggle for the authority to regulate digital applications.

In this respect, the arguments raised by the two challenging approaches, conceiving the internet (and cyber-space in general) as the exception, a cradle to a digital world without state controls, embedded in the utopia of self-regulation by multiple stakeholders, seems to have failed to repel or replace state intervention (sovereignty) over the digital realm. Currently, both approaches remain as alternative, non-binding models of rules for cyberspace (POHLE, THIEL, 2020, p. 5).

3. DISCUSSING THE EU's AMBITION TO INFLUENCE AI STANDARDS

3.1 Context and terminology

It should be noted the digital sovereignty dilemma has come to represent much more than the lack of a territorial base in which a state ultimately rules, it embraces a bigger challenge of the transformations imposed on societies due to digitalization and globalization. For the EU, more specifically, it means to ordain and secure the digital element around core foundational principles of human rights, freedom, infrastructure and fair economic competition.

With the rapid advance of technology, nations around the globe are competing for leadership in shaping the destiny of nascent technological applications such as Artificial Intelligence, to derive the most benefit from them. The discourse of EU political leaders is in line with an attempt to control digital applications and their societal effects, albeit under the guise of sovereignty and strategic autonomy (SHAPIRO, 2020, p. 7).

Sovereignty is a concept defined in several fields of study, as shown earlier in this work. And by looking at the speeches of European political actors over the last six years, it is noticeable the growing use of the term “sovereignty” preceded by “digital”, “cyber” and “technology”. It is also important to consider the profusion of terms employed by the EU when referring to its geopolitical ambitions, such as "digital sovereignty", "strategic sovereignty" or even "semiconductor sovereignty", which has been criticized by some authors for lacking a precise definition of its meaning (CSERNATONI, 2022, p. 2; BARRINHA; CHRISTOU, 2022, p. 4).

It is fundamental to remark that digital sovereignty for the EU is a concept that includes several other topics and that AI is just one of the many approaches to a digitally sovereign and autonomous EU. For instance, the EU’s security and defense approach in regards to how technology shapes the military, weapons and future warfare. But also, economic competition and the EU strategy to try and tame the giant private companies such as Google or Apple through anti-trust sanctions, to name just a few examples.

Although the terms “strategic sovereignty” and “strategic autonomy” are both concepts used by the EU political class, they are not equivalent. Turning the attention to strategic sovereignty, it is generally employed to refer to policies comprising several areas of technology. In addition to Artificial Intelligence, it also encompasses autonomy in raw materials to reduce dependency on China, energy autonomy, especially with the outbreak of war in Ukraine and tensions with Russia, as well as the creation of the digital euro to ensure monetary autonomy (TIMMERS, 2020). On the other hand, "strategic autonomy" is an ambiguous concept. It is generally defined by states as the means to achieve sovereignty and is most often used in military, defense and security circles[13].

[13] In an attempt to overcome this vagueness, Paul Timmers (2019) proposes the following definition of strategic autonomy: "(...) the ability, in terms of capacity and capabilities, to decide and act upon essential aspects of one's longer-term future in the economy, society and their institutions".

Therefore, when analyzing the digital sovereignty studied in this essay, it is paramount to remember the scope and objectives of this work, which is essentially focused on AI, the EU's ambition to influence AI regulatory standards, through the prism of regulatory competition.

For the EU, "digital sovereignty" is frequently associated with a broader initiative of strategic autonomy (TIMMERS, 2019), first introduced in the EU context in the global strategy of 2016. Digital sovereignty also means the path for the EU to foster a resilient and secure society, to gain the forefront of AI and technological innovation, as well as to reduce dependencies on other parts of the world (BELLANOVA *et al.*, 2022, p. 338).

In this context and especially in recent years, the European Union has moved to the forefront of digital regulation in various sectors, from the protection of personal data to the fight against disinformation and, last but not least, artificial intelligence. As Christakis (2020, p. 16) points out, "If 'digital sovereignty' means regulatory power there is indeed little doubt that Europe is "sovereign".

The literature points to a general understanding that starting in 2018 the idea of Europe having its faith in its hand gained momentum (CHRISTAKIS 2020, p. 3), led by a track of events such as the Snowden revelation of mass US surveillance, along with the following Cambridge Analytica scandal, which highlighted the need for EU regulations over digital services (CALDERARO, BLUMFELDE, 2022, p. 2).

Subsequently, EU policy and discourse began to claim *digital strategic autonomy* by reducing its dependencies on external countries and by achieving a leadership position in key areas (BELLANOVA *et al.*, 2022, p. 2). The literature also identifies the EU as one of the pioneers in the regulation of AI under an ethical and human-centered approach, eager to become a world leader in responsible and trustworthy AI (BRATTBERG *et al.*, 2020, p. 33). Emerging AI applications are giving rise to new aspects of international rivalry (CSERNATONI,

2022, p. 1), one in which the EU is keen to promote a “European way” of regulating the matter in the face of competition with China and the USA (STIX, 2021, p. 7).

Championing an approach to AI that promotes innovation and at the same time secures its foundational values, the EU desires to leverage its regulatory powers to influence global standards for AI in the global arena, laying the ground for ethical and risk-based use of its potential (JUSTO-HANANI, 2022, p. 14-15).

Despite the use of numerous different expressions, through political discourse analysis from senior European leaders, it is possible to identify at least three of the most frequent terminologies employed by EU political actors and their corresponding definitions: strategic autonomy, technological sovereignty and data sovereignty.

In the 2016 policy entitled "Global Strategy for Foreign and Security Policy", the European Council interpreted strategic autonomy as the "capacity to act autonomously when and where necessary and with partners wherever possible" (COUNCIL OF THE EU, 2016, p. 2). This definition finds support in a speech by Charles Michel (2020), who sees it as "less dependence and more influence", echoing the EU's ambitions as a geopolitical actor.

The second concept of technological sovereignty was put forward by the president of the European Commission, Ursula von der Leyen (2020) as "(...) the capability that Europe must have to make its own choices, based on its values, respecting its own rules." This speech reflects the EU Cybersecurity Strategy for the Digital Decade (2020), which lists technological sovereignty as its number one priority under the aforementioned strategy plan. For the EU, achieving these goals entails among other actions investing in critical areas and reducing external dependencies, ensuring the creation of a critical infrastructure for digital services, including 5G networks, as well as increasing the EU's relevance in global technology supply chains.

The third expression, data sovereignty, is the most specific one among those three. It refers to the EU's ability to control the use of European citizens' data to make the EU sovereign in the nascent data-fueled economy. An example of this ambition is the General Data Protection Regulation (GDPR) enacted in 2018, which implements a series of protective measures and regulatory prescriptions regarding the processing of personal data from European citizens, including by foreign companies in certain specific cases.

The repeated use of these expressions in EU political circles, as it will be seen in the next topic of study, reveals the entity's growing ambition to become sovereign over AI. Which essentially appears to represent Europe’s capability to stand out for itself and to decide in an autonomous or strategic way how to best extract the benefits and minimize the risks of AI. It also means not being completely reliant on other countries, mainly the US, as the EU did in the past with issues such as defense and security.

The European narrative of reclaiming sovereignty does not seem to constitute just a “catchphrase” lacking political backing or practical force. Rather it gives shape to a new imaginary of the EU as a digital sovereign, which suggests the establishment of a new way of how sovereignty is practiced (BELLANOVA *et al.*, 2022, p. 345). Therefore, we argue that Europe’s aspiration to become sovereign unveils a desire to also become a geopolitical player in the context of global competition between big powers, especially the US and China.

Despite the arguments raised in this section showcasing the EU’s posturing of digital sovereignty, an important question is posed: how could the EU be sovereign over AI without actually possessing traditional state sovereign powers?

3.2 The EU digital sovereign as a challenge to traditional concepts

The EU's aspirations to be a digital sovereign raise several questions regarding its legal and *sui generis* nature. For the purpose of this study, as will be detailed ahead, we do not focus on the EU's integration process, but rather on the post-traditionalist sovereignty interpretation applied to current EU reality, particularly concerning the European ambition as a regulatory influencing power of AI global standards.

With that in mind, it should be noted that the expression "sovereignty" does not appear anywhere in the EU's founding treaties, except for two Brexit-specific provisions, regarding the UK sovereignty over two military bases in Cyprus (CHRISTAKIS, 2020, p. 9). However, it can be argued the EU is a competent and legitimate actor to "carry out activities" in the area of research and technological development and also to "define and implement programmes" according to the current version of Article 4, nº 3 of the Treaty on the Functioning of the European Union (TFEU) (JUSTO-HANANI, 2022).

This is especially true in regard to AI applications touching the security and defense sectors, for which the EU is competent "to define and implement a common foreign and security policy, including the progressive framing of a common defense policy", in line with Article 2, nº 4 of the TFEU[14] (EUROPEAN UNION, 2012).

[14] Article 4 (…) 3. In the areas of research, technological development and space, the Union shall have competence to carry out activities, in particular to define and implement programmes; however, the exercise of that competence shall not result in Member States being prevented from exercising theirs.

Article 2 (…) 4. The Union shall have competence, in accordance with the provisions of the Treaty on European Union, to define and implement a common foreign and security policy, including the progressive framing of a common defence policy.

From this perspective, there is a tension to reconcile the EU with the classic elements that define sovereignty, above all a territorial basis of its own, which it lacks. In this regard, a challenge arises as to how the EU could operationalize these classic concepts to build its identity as a sovereign entity. When the digital element is added, the issue becomes even more complicated, given that sovereignty over the digital is disputed even against traditional states, let alone such a singular entity like the EU.

This challenge is not as deep for traditional states like the US and China, whose sovereignty is recognized by the international community in both internal and external dimensions. As traditional states, with a defined territory, population and power, China and the US can navigate more freely in the digital sovereignty proposition, since as debated earlier, obstacles to applied sovereignty over the digital have been relative.

The undefinition of the EU posturing as a sovereign entity over the digital, all the while lacking the classic prerequisites of a sovereign, are some of the factors that contribute to turning the debate into a “cacophony of perspectives from both scholars and policymakers” (CALDERARO, BLUMFELDE, 2022, p. 416).

Current EU practices embrace the concept of digital sovereignty as a way to regain control over cyberspace and also to foster a leading position to counter the following concerns (BELLANOVA *et al,* 2022).

First, the EU's dependency on digital infrastructure, services and content providers from companies based outside of the Member-States' territory, leads to a reduced power to enforce EU laws and principles onto these foreign companies outside the EU’s jurisdiction. Second, the low economic competitiveness of EU tech companies and loss of market share in the face of foreign competition (outside the EU), which results in diminishing capacity to spread technologies designed under EU principles, impacting also the Single Market. Third, the EU’s

vulnerability to cyber-attacks, notably those with an aim at electoral processes, public services and national institutions.

In this line of thought, we follow Calderaro and Blumfelde's (2022) proposal to frame the EU digital sovereignty over the fundamentals of digital technology: data, algorithms and hardware. By adopting this approach, we can thus explore the motivations behind a claim of EU sovereignty and what it means to counter.

Regarding data, we might first look at the European proposal in 2012 for a comprehensive reform of the EU's data protection rules (from 1995), which raised the argument of the right to be forgotten. This is one of the hallmarks of establishing the "European approach" to digital privacy, mainly enforceable against US internet service providers, most notably Google.

Years later, with the Snowden revelations of the US eavesdropping on European citizens and political leaders, the EU was compelled to develop the GDPR, a flagship regulation intended to curb data mining according to European standards and reinforce Europe's position against a liberal attitude from the US, which to this day lacks a data protection regulation nation-wide[15].

The GDPR showcases Europe acting as a digital sovereign entity, despite lacking the traditional state sovereign powers and making efforts to enforce its rule mostly against American companies that dominate tech. By protecting EU citizens' data even against foreign-based companies, the EU effectively shapes internet standards far beyond the Single Market, with a potential to also influence other countries to adhere to similar standards as a consequence of the EU's normative power, studied further ahead in this essay.

[15] The state of California enacted in 2018 the California Consumer Privacy Act (CCPA) with notable influences from GDPR, given the lack of action at federal level by the US government.

Following to algorithms, the spread of extremist online trends and speeches highlighted the power of the algorithms and the lack of public oversight. This was demonstrated notably in 2020 through the dissemination of ISIS' ideological recruitment propaganda, and in 2014 after the Cambridge Analytica scandal. Especially the latter showed the influential capacities of US-based online platforms in influencing EU politics, and the massive processing of EU citizens' personal data without transparency guidelines and oversight.

These events also highlighted at that time (mid-2010) a frail EU control over algorithm accountability, bolstered by a context of growing friction with the US under the Trump Administration. Namely via trade tariffs and the US hesitancy to negotiate a compromise with the EU over the massive power accumulated by the tech giants.

The third element is hardware, more specifically the technological hardware and computational power that run AI applications. In this regard, the EU Agency for Cybersecurity published a report in 2017 warning about a critically high dependency of the EU on sourcing hardware from third (non-EU) countries, pointing out the risks of mass surveillance sponsored by a third state, as some cases had already been verified (ENISA, 2017).

The importance of this topic only grew from 2017 onwards. In 2019 for instance, the EU Parliament stressed the importance of developing a strategy to reduce the EU's dependency on foreign critical technology (EUROPEAN PARLIAMENT, 2019b).

In the same year, after the inauguration of Ursula von der Leyen as the President of the EU Commission, she reiterated the need to foster EU "technological sovereignty" (as was discussed previously in this chapter) by developing in Europe critical technologies such as quantum computers and 5G connections. The idea is that by developing technology intra-EU, European

privacy and security principles would be embedded into products and services by design.

The EU is *a sui generis* political organization. It is not a state, but it also represents more than just a multilateral political and economic organization. On its own, the EU is not sovereign, much less a digital sovereign as it wants to be. As Liaropoulos (2021, p. 248) rightly points out, "[w]hether European sovereignty implies the weakening of national sovereignties, the creation of a shared sovereignty or the construction of collective sovereignty is a strong theoretical exercise (...)".

The process of European integration is one of the most relevant elements in limiting sovereignty as a central part of the state's role (PHILPOTT, 2020; KRASNER, 1995). As a result, neither the EU nor the Member States have full sovereign prerogatives, i.e., absolute control over traditional state matters, since part of the national competencies have been delegated (exclusively or partially) to the EU[16].

European integration does not necessarily entail the notion of loss of sovereignty from the point of view of the Member-States, as the joint European decision on delegated matters is supposed to make them more relevant in political and economic terms. According to Broeders *et al.* (2023, p. 1265), this shared sovereignty carries more weight in areas in which European integration is most advanced. The best example of this would be the internal market, in which the EU's powers are more detailed. In this respect, the EU's authority and control are more perceptible, making it more likely a geopolitical actor.

[16] It is important to distinguish that EU's actions in relation to its internal market, for which there are clearer legal bases for action, are generally referred to as "pooled sovereignty" (PETERSON, 1997). Some competences are still retained by the Member States, notably in sectors such as defense and national security, while decisions about the currency and the common market, for example, have been delegated to the political body of the EU, as outlined in its treaties (BROEDERS et al., 2023, p. 1264-65).

However, the aforementioned authors argue there is no clear basis for geopolitical action by the EU, which makes it more difficult for all Member-States to act in unison on strategic global issues (BROEDERS et al., 2023, p. 1262), such as AI presents itself. In addition, shared sovereignty limits the EU's capacity for strategic actions that might delve into Member-States' competencies such as national security, foreign policy and defense. Each Member-State puts forward different priorities and positions on any given matter, which is in stark contrast to what is required of a geopolitical power, namely strategic, focused and coordinated actions (*idem*, p. 1274).

Thus, it is possible to deduce there is a mismatch between the EU's discourse on achieving strategic autonomy and digital sovereignty when compared to its traditional role as mainly an economic and civil power. That said, Europe's desire to achieve a position of geopolitical power contrasts with its actions based on internal values and principles inherent to the European community.

3.3 A conceptual leap on sovereignty

Notwithstanding the above discussion, EU's political protagonists have chosen to employ terminologies that are usually associated with the traditional concept of state power, sovereignty and strategic autonomy. The employment of these terms has become so frequent that it seems to have trivialized their apparent paradox, something that was dubbed by Bellanova *et al.* as "a crisis of sovereignty as both an analytical and a political tool" (2022, p. 339).

The discussion on digital sovereignty can be divided into two strands. The first is of classical origin, advocated by Bodin and Hobbes over to the Peace of Westphalia previously studied in this essay. This conception implies a unitary definition of sovereignty, in which a supreme authority figure is vested with powers to decide matters, end conflicts and manage the State. It also involves the establishment of a territorial unit or entity in which the people are established,

as well as the administrative apparatus of governance to defend sovereignty from internal and external challenges.

This interpretation of sovereignty has been idealized throughout the ages, supposedly resistant to the passage of time and turmoil that, at certain periods, might take society by storm. This interpretation, however, seems to disregard the nuances that permeate the phenomenon of sovereignty, since either sovereignty exists completely with all its constituent elements or it does not exist at all.

Therefore, to overcome this limitation with the classical theory of sovereignty, it is possible to suggest that the digital sovereignty called for by the EU could be a new step on the ladder of the evolution of the concept of sovereignty itself, which historically has been malleable and changeable, as Falk (2001) has rightly pointed out.

It should be noted that globalization and the processes of European integration have equally undermined a supposed single, absolute concept of sovereignty. This is equally in line with the arguments from Johannes Trumfart, for whom the concept of digital sovereignty has not just one specific meaning, as it varies according to the political power context in which it is used:

> *"(…) the developing concept of digital sovereignty and related terms do not have a specific fixed meaning (yet), but rather, their meaning changes with the traditions they come from, the contexts in which they are used and the power-relations inherent to those contexts" (TRUMFART, 2021, p. 5).*

Such a sovereignty crisis as a consequence of the EU's posturing can be overcome by analyzing not only the meaning but also the practices that build up sovereignty. In this sense, we join a school of thought (BELLANOVA *et al.*, 2022; DE WILDE *et al.*, 2008; BARRINHA *et al.*, 2022) that suggests a so-called post-traditionalist concept of sovereignty, in which the focus of the problem turns to the discursive elements of sovereignty and its effects, rather than stressing the difficult match of theoretical pre-requisites. Bellanova *et al.* (2020, p. 344) rightly point out that: "[t]his perspective moves away from grand theories of sovereignty,

and rather favors a more situated analysis of how sovereignty changes at critical, historical junctions".

This scholarly approach aims to analyze sovereignty not simply as it is or should be, but rather how it is politically articulated and constructed (BARRINHA et al., 2022, p. 358), underlying an interpretation of performative political discourses. Bellanova *et al.* (2022, p. 345) describe that:

> *(…) analyzed through the lens of a post-traditionalist approach, EU digital sovereignty would indeed be a kind of sovereignty that would not break entirely out of the traditional mould of sovereignty, but would nevertheless disaggregate and reassemble some of its constitutive elements in relation to the evolving and diverse nature of the digital.*

The post-traditional line of thought advocated by this essay with support from sources in academia[17], does not interpret sovereignty in a straight and absolute manner, but rather as a changing and transformative concept. This means that sovereignty is interpreted according to the issues arising in each historical context, adapting the meaning and practice of sovereignty according to the experiences and ideas of each time.

In this sense, Bellanova *et al.* (2022, p. 340) argue that discursive elements are central to understanding the proposition of a post-traditionalist definition of sovereignty. More specifically, the claim to be sovereign, and how this claim shapes society according to the "normative worldviews" of the entity that makes the claim.

In essence, this school of thought approaches sovereignty as a concept that is prone to evolution and (de)construction, allowing the existence and practice of a digitally sovereign EU. The overlap of digital against sovereignty

[17] For instance, Barrinha et al. (2022), Bellanova et al. (2020) and De Wilde et al. (2008)

allows us to research and explore how both the elements of “sovereignty” and “digital” reshape each other.

To investigate whether the post-traditionalist approach to sovereignty by the EU is feasible and also factually put into practice, we will study the EU’s claim to be sovereign and how it intends to normatively shape worldviews in regard to AI. We will employ a discourse analysis to trace back the evolution of public speeches by lead figures in Brussels, to clarify how the EU's posturing on sovereignty evolved over time and to identify if such theory on sovereignty, through a performative political discourse, might be observed in practice.

Beginning in 2018, Jean Claude Juncker, then President of the European Commission, said in his State of the Union speech "the hour of European sovereignty has come". At that time, Juncker was criticized by "half of Europe" (TIMMERS, 2020). However, it was from that moment on that scholarly literature identified a notable shift in the EU's political perception of digital sovereignty[18] (HOBBS, 2020).

In 2019, Ursula von der Leyen, then recently inaugurated president of the European Commission, brought to the fore prioritizing the EU technological sovereignty, a topic that was also reflected in Juncker's speech a year earlier. In her Political Guidelines, she listed as one of the priorities of her mandate achieving “technological sovereignty in some critical areas of technology”, for instance "blockchain, high-performance computing, quantum computing, algorithms and tools to allow data sharing and data usage" (LEYEN, 2019).

[18] This focus shift in EU political discourse resonates with a speech by Angela Merkel in 2017, then Germany chancellor. Speaking at a rally in Munich shortly after tough negotiations at G7 and NATO meetings, the chancellor argued the post-war Western alliance had been severely undermined by the UK Brexit vote and the election of Donald Trump in the US. Consequently, she argued that Europe could no longer be completely dependent on its partners: “The times in which we could completely depend on others are, to a certain extent, over (…) I’ve experienced that in the last few days. We Europeans truly have to take our fate into our own hands.” (translated and quoted by HENLEY, 2017).

In September 2020, the EU Commissioner for the Internal Market Thierry Breton published an article calling for strategic autonomy and sovereignty. Interestingly, he used very similar words as the German chancellor did just two years earlier (to take fate into Europe's hands):

> *(…) Europe must now take its strategic interests into its own hands to ensure sovereignty, which has become a common necessity. (…) Faced with the "technological war" being waged by the United States and China, Europe must now lay the foundations of its sovereignty for the next 20 years."* (BRETON, 2020).

Subsequently, at one of the European Council meetings held in the same year as Breton's speech, the EU proposed the following definition of digital sovereignty, in which AI is also included amongst other topics influenced by the digital:

> *"To be digitally sovereign, the EU must build a truly digital single market, reinforce its ability to define its own rules, to make autonomous technological choices, and to develop and deploy strategic digital capacities and infrastructure. At the international level, the EU will leverage its tools and regulatory powers to help shape global rules and standards. The EU will remain open to all companies complying with European rules and standards. Digital development must safeguard our values, fundamental rights and security, and be socially balanced. Such a human-centred approach will increase the attractiveness of the European model." (EUROPEAN COUNCIL, 2020).*

Several factors have contributed to this shift in political focus. Among them, is the Snowden affair, which raised important warnings about mass surveillance by the US and concerns about data security. The Cambridge Analytica case also highlighted the growing role of intermediaries in data transactions, as well as the perception of the significant economic and political power amassed by global digital companies (CALDERARO *et al.*, 2022, p. 416).

Likewise, the growing geopolitical competition between the US and China, especially after the election of Donald Trump. And the realization that technological applications, such as AI, had become a fundamental part of the economy and the "big power game" of the future. This was made even clearer after the outbreak of the COVID pandemic in 2020 when the world very quickly had to accelerate the adoption of technology for purposes such as work, education and health to name just a few examples.

The EU's discourse has intensified within a short time against a background of great power and economic influence of big techs (GAFAM), which dominate sectors such as social media, e-commerce and digital advertising, and that have progressively become fundamental parts of modern life over this century. The dominance of private companies, especially foreign ones of American origin, is an argument often used to justify a supposed "colonization" of Europe.

It is noteworthy the evolution of the sovereignty assertion by the EU, which started as a general claim by Merkel and Juncker in 2017-2018, but in 2020 the European Council had already outlined several strategies to make the EU sovereign ambitions come true, therefore enacting in practice the performative political discourse set out by the post-traditionalist sovereignty theory.

For instance, creating a “truly digital” Single Market, to “develop and deploy strategic digital capacities and infrastructure”, and at the international level to “leverage its tools and regulatory powers to help shape global rules and standards”, which in our view is precisely the sovereignty claim hypothesis posed by the post-traditionalist sovereignty theory.

By retracing the EU’s actions in several domains, we argue that the EU is claiming to be sovereign in the fashion of such a post-traditionalist concept of sovereignty. By frequently employing expressions of autonomy as a claim to be sovereign, and also by its ambition to shape AI’s global standards according to the EU’s core principles, the EU is effectively ambitioning to shape AI according to its worldview through performative political discourses, as the post-traditionalist theory proposes.

In line with this discussion, we thus advocate that AI constitutes a critical historical juncture, justifying a proposition of a post-traditionalist approach to sovereignty. This in turn, we argue, constitutes the first theoretical groundwork

for the EU to become a digital sovereign, despite the remaining (and valid) critiques on how the EU could turn this ambition into reality.

In this sense, the EU seems to employ digital sovereignty not so much as an intricate theoretical concept, but rather as a *realpolitik* tool to empower the EU's influencing position on global AI standards under a differentiating approach of ethical and trustworthy AI. The digital element, in this view, is an extension of the arena in which global politics is played.

Furthermore, while considering the EU (but China and the US as well) frames this competition as existential, with grave impacts on the economy and society as a whole, affecting all Member-States and putting at risk the very essence of the European integration project, this conclusion serves as justification for the EU to enact competence to claim sovereignty over AI.

This in turn leads to the realization of what kind of geopolitical actor the EU ambitions to be: one that albeit not possessing traditional state sovereign prerogatives, is in practice able to mobilize EU society and Member-States with the objective of protecting the Single Market, European citizens, its core values and rights.

Thus, the EU leverages political discourse and its institutional framework to turn its sovereignty vision into reality, backed by the post-traditionalist concept herein discussed.

Given that AI and the digital element sit at the very intersection of diverse fields of knowledge such as International Relations, science and politics, we argue this new element carries the potential to (re)signify the meaning of sovereignty to a new regulatory approach. One that allows for traditional states, and in a certain measure the EU, to claim sovereignty over AI.

It should be noted that the EU as a digital supranational sovereign will not possess all the classical elements that constitute a sovereign entity. Nonetheless, we argue that it is empowered by a host of different tools, such as the economic weight of the Single Market and the exercise of the EU's normative power, for at least this proposition to be considered. We also point out that this discussion does not exhaust the theme and can be suggested as an avenue of future investigation.

Therefore, we propose that a digitally sovereign EU is a performative discourse of claiming to be sovereign. One that counters several challenges the EU might face in the future as AI develops, namely related to geopolitics, security and economy. It also showcases the EU's ambition for itself, as an integration project (BELLANOVA *et al*., 2022, p. 348).

3.4 The EU's normative power

To continue the study of the EU's claim to influence global standards for AI amidst a regulatory competition, we now move on to investigate the EU's normative power. As this is one of the main elements that articulate and put the EU's ambition and performative political discourse into practice.

The phenomenon in which the EU, through regulation, is unilaterally able to shape global standards is by some referred to as normative power. This concept originates from the work of Manners (2002) and is supported by two basic foundations: first, the protection of fundamental rights inside and outside the EU territory, and second the defense of free trade and technological progress.

The protection of fundamental rights is the cornerstone and one of the founding principles of the European Union, a fundamental requirement for its legitimacy, while the free market has been present in the EU's economic practices since at least the 1980s. It is also important to note that since the integration of Eastern European countries, the EU has become a more prominent actor in

promoting and defending the rules-based multilateral order (BROEDERS et al., 2023, p. 1265).

The EU is associated with the principle of civil power, in which civil action and the use of economic tools and strategies prevail over security and defense instruments. In this sense, the EU's principles, culture and identity, institutions and foreign policy strategies are subjects of soft power that shape the EU's regulatory action. Consequently, the manifestation of soft power contributes to strengthening the EU's normative power.

Although fundamentally built from the use of soft power, it cannot be ignored that the EU also employs hard power mechanisms, through enforcement measures and pressure in the political and economic spheres, such as sanctions and military missions.

The EU's normative power is therefore twofold since it is capable of exercising both soft and hard powers. In this context, negotiation and persuasion (soft power) comprise its principal means of action, which are hallmarks of the EU's actions at the international level. The use of "brute force" mechanisms (hard power) by the EU, although they exist, still generally preserves a civilian purpose, such as military actions, which are generally associated with humanitarian missions.

One of the most celebrated scholarly works on regulatory power was published by Anu Bradford, who classifies this phenomenon as "The Brussels Effect", which consists of a "unilateral regulatory globalization" (2020, p. 13), writing that the EU:

> *"(…) promulgates regulations that influence which products are built and how business is conducted, not just in Europe but everywhere in the world. In this way, the EU wields significant, unique, and highly penetrating power to unilaterally transform global markets, be it through its ability to set the standards in competition policy, environmental protection,*

food safety, the protection of privacy, or the regulation of hate speech in social media". (BRADFORD, 2020, p. 9)

Bradford's work (2020) is based on key assumptions of the EU Single Market akin to a race to the top, a concept further explored in the chapter dedicated to regulatory competition. Those assumptions are namely the size and importance of the Single Market, the EU's capacity to regulate, the high-level regulatory standards[19], inelasticity of jurisdiction[20] and the indivisibility of global markets[21].

It is worth noting that the global adoption of European regulatory standards can also imply an allegation of interference in the sovereignty of other countries. After all, each sovereign state is independent of the other at least in terms of the normative nature of the concept of (external) sovereignty. Certain authors (FOSBERG, 2011; HYDE-PRICE, 2006) have raised critiques that the EU is exercising political and economic dominance over other nations with "imperialist" motives, through the instrumental use of its regulatory powers. Mark Scott (2017) goes further when arguing that the EU aspires to become "the world's digital policeman".

On the other hand, the EU argues that the adoption of its rules as a global regulatory standard is not achieved by coercion or brute power, but rather by market forces. By doing that, Europeans are demanding that companies operating in the Single Market comply with European rules, and the enforcement of those rules means leveling the playing field for both European and foreign companies. Furthermore, the EU discursively displays itself as the "benign global

[19] Which presupposes that adapting to more stringent rules provides market access to all other jurisdictions (outside the EU) at lower regulatory standards.

[20] Means that a corporation cannot escape EU jurisdiction when providing products and services inside the Single Market.

[21] Assuming that high EU regulation standards limit corporations' ability to offer different products or services to comply with specific jurisdictions.

hegemon", whose policies reflect values that are both "normatively desirable and universally applicable" (Bradford, 2020, p. 248-249).

Scholars such as the American economist Joseph Stiglitz share this understanding of desirable and universally applicable European values as can be noticed in a 2007 Op-Ed:

> (…) Indeed, Europe's success is due in part to its promotion of a set of values that, while quintessentially European, are at the same time global. (…) Today, only Europe can speak with credibility on the subject of universal human rights. For the sake of all of us, Europe must continue to speak out - even more forcibly than it has in the past. (STIGLITZ, 2007).

Although the EU's normative power has been widely celebrated and promoted by Brussels, the lack of European tech companies at the scale of GAFAM has according to some authors hampered the European idealization of achieving leadership in AI, or for that matter, in digital sovereignty as well. Calderaro and Blumfelde (2022, p. 417) state that as a result, the EU digital sovereignty turned out to be a series of protective measures of the Internal Market, "impacting on the monopoly of US digital service providers and Chinese tech companies in the European market only".

At the end of 2023, however, a noticeable example of the EU normative power broke the news, one which counters the argument that Europe is not capable to arm-wrestle giant GAFAM companies. Following more than a decade of dispute with the EU, Apple caved and announced that starting with iPhone 15, it would replace its proprietary Lightning charging port technology, opting instead for the global standard of USB-C port.

Dubbed by Politico as the "charger war" (HAECK, 2023), the dispute originated from the EU Commission's Radio Equipment Directive (2021/0291[COD]), issued in 2021 with binding effects, which mandates the use of the USB-C port in smartphones, tablets and other electronic devices latest by the end of 2024, based on consumer's convenience and the need to reduce electronic waste.

Apple strongly resisted the change in the past and during public consultations voiced its concerns that the EU measure would stifle innovation. Furthermore, one MEP interviewed by Politico recalls that Apple executives were "nearly laughing at us" when European parliamentarians visited Apple headquarters in 2020 to discuss the proposal.

The Apple charging port dispute showcases a major win for the EU Commission. Faced with strong resistance, EU legislation compelled one of the most powerful companies in the world to change its most lucrative and well-known product, the iPhone.

It exemplifies the EU's regulatory force to subdue a major tech company in line with European values, but it also reaffirms the existence and practice of the EU's normative power, and for that matter, a claim of EU technological sovereignty. Given that Apple will roll out the change globally, Bradford's definition of "unilateral regulatory globalization" turns into reality in a stark manner.

4. AI REGULATORY COMPETITION

4.1 Some of the issues calling for AI regulation

As discussed previously, AI has become of strategic importance to governments around the globe, and in this turn of events a global competition to develop and also to regulate AI has emerged. This essay will explore and focus on the regulatory competition posed by three major global powers. First, the EU, a *sui generis* entity discussed in the previous chapter. The United States, the richest country on Earth, home to the most powerful tech companies to this day. Last but not least, China, perhaps the biggest manufacturing hub in the world, and at the same time a rising powerhouse with geopolitical ambitions.

The importance of the theme is brought forward by the celebrated author Yuval Harari, who states that data is gathered from numerous countries around the world but data processing (also called mining) takes place mainly in the US and China. Along with this thinking, Harari warns that: “[i]f this trend continues, the world could soon witness a new kind of colonialism—data colonialism—in which raw information is mined in numerous countries, processed mainly in the imperial hub, and then used to exercise control throughout the world (HARARI, 2019).

Naturally, it is worth noting that regulation might also come from private companies such as Google, Amazon or Microsoft, one of the global tech behemoths. Notwithstanding, since the focus of this essay is to study the regulatory competition between the EU, China and the USA, the analysis will mostly cover the regulatory effort put forward by governmental agencies, rather than private companies or individuals.

The growing presence and influence of AI in the most diverse spheres of human life has sparked a pressing discussion about the need to regulate it. Coupled with unprecedented learning, automation and data analysis capabilities, AI has remarkable potential to reshape economies, transform industries and redefine social interactions. However, along with this promise of progress come significant concerns related to ethics, privacy, security and fairness (EZRACHI & STUCKE, 2017).

One of the most pressing challenges is algorithmic discrimination, a complex and insidious problem that has profound implications for equity and justice (HOROWITZ *et al.*, 2018). This occurs when AI algorithms, which are often trained on historical data, inadvertently perpetuate existing prejudices. This can happen in many ways (SMUHA, 2021).

For example, if a recruitment algorithm is trained on a historical dataset that reflects gender or racial inequalities in the workplace, the algorithm may be

biased to favor candidates from one demographic group over others (PEREIRA & TEIXEIRA, 2019). Similarly, credit rating algorithms can perpetuate financial disparities by discriminating against people based on race, gender or socioeconomic class (DALY *et al.,* 2019).

The growing presence of AI in modern society has also highlighted another relevant concern: data privacy (PEREIRA & TEIXEIRA, 2019). As AI becomes a central tool in a wide variety of sectors, the collection, storage and processing of large amounts of personal data has become ever more present as well (HOROWITZ *et al.,* 2018).

Extensive collection of personal data occurs in many everyday interactions with technology. From browsing the internet to using mobile apps, smart sensors and Internet of Things (IoT) devices, a large amount of personal information is generated and recorded (MINSSEN *et al.,* 2020). This includes data such as web search and location records, shopping behaviors, medical information and even personal conversations with virtual assistants. This is also related to the fact that AI relies on this data to learn, adapt and provide personalized services (BUITEN, 2019).

Data security is also another concern. With the proliferation of personal data stored in digital databases, vulnerability to cyber-attacks and security breaches increases. The loss or leakage of sensitive data can have real-life consequences, including identity theft, financial fraud and other types of cybercrime (HOROWITZ *et al.,* 2018).

To address these issues, many jurisdictions have implemented data privacy regulations, such as the European Union's General Data Protection Regulation (GDPR). These regulations establish rules on how organizations should collect, use and protect individuals' personal data, as well as imposing significant penalties for violations (BUITEN, 2019).

The rapid adoption of Artificial Intelligence poses relevant socio-economic implications that go beyond the merely technological sphere. AI-driven automation has the potential to radically transform the workforce and the global economy, presenting a series of challenges and opportunities (EZRACHI & STUCKE, 2017). This phenomenon is seen as a promising tool for increasing efficiency in many sectors. It can automate repetitive tasks, improve accuracy and speed up processes, which can lead to significant productivity gains. This, in turn, can contribute to economic growth and the competitiveness of companies and countries (SMUHA, 2021).

The replacement of jobs by machines fuels concerns about technological unemployment, where workers may face difficulties in transitioning to new jobs, especially those with specialized skills that are not easily transferable to other occupations (PEREIRA & TEIXEIRA, 2019). In addition, automation can also deepen economic inequality, as the benefits of efficiency and improved productivity can be concentrated in the hands of the companies and individuals who own and control the technology (MINSSEN *et al.,* 2020).

4.2 Defining the framework of AI regulatory competition

The classic literature on regulatory competition was first developed by Charles Tiebout's *Pure Theory of Local Expenditures* (1956) and essentially addresses city governments competing to attract residents based on local policies. Tiebout also raises a number of "efficiency preconditions" for such competition to occur, such as an absence of political or market failures, jurisdiction mobility, transparency and adequate knowledge of the different jurisdictional "options", to name a few.

However, this essay advocates a moderate position such as Radaelli's (2004, p. 2), who argues that finding the theoretical preconditions in practical reality is hard and that "frictions and transaction costs are a normal feature of the markets". In addition, he argues that more recent studies are not focused on

preconditions of efficiencies as Tiebout's work does, but rather "on the direction of regulatory races". Which denotes a more realistic political view of analyzing the mechanisms of competition and not being "fixated" on trying to find theoretical preconditions of efficiency.

In line with this thinking, what do great powers to reinforce (or challenge others') digital sovereignty (by regulation or the lack of it), and how is this a competition?

When studying regulatory competition, academics usually point out a race to the bottom or a race to the top. A race to the bottom is generally understood to take place in a scenario of economic interdependence in which one country unilaterally lowers its regulation standards with aims to lure in capital and labor, causing other countries to lose mobile factors of production (business, capital and skilled labor). The affected countries afterward join the move in lowering regulatory standards in order to balance out its losses. In this phenomenon, countries involved end up worse than they were before the competition began, and especially worse if their regulatory policies were to be coordinated.

A race to the bottom is also called the "Delaware Effect", taking its name from regulatory policies of the homonym US state. Delaware is renowned for lowering standards of corporate regulation (such as tax and corporate law) to attract the relocation of domestic businesses. Therefore, a kind of internal regulatory competition that has earned Delaware half of US companies being based there (HILDEBRANDT, 2022, p. 12). This in turn compelled other US states to do the same, out of fears of losses of capital, labor and taxes.

The opposite effect is called a race to the top, also called the "California Effect", first proposed by David Vogel's work *Trading Up, Consumer and Environmental Regulation in a Global Economy* (1995). In this mirrored model, ensues not a regulatory competition, but rather a cooperation for higher regulatory standards.

The California Effect presupposes market integration and theorizes that after a country (or state in this case) raises its standards, others will do the same due to fear of losing market share or access. In addition, corporations would be incentivized to adopt higher and more stringent regulations to be compliant with less stringent jurisdictions (HILDEBRANDT, 2022, p. 12). Ideally, the first-mover country or state should have a robust and profitable consumer market to be able to attract others, such as the US state of California.

In an overview, a regulatory policy might have the objective of either safeguarding or fostering a certain initiative or effect. Regulation can also be achieved via law, a more traditional way, but also through market forces and societal norms.

In regards to legal regulation, the focus of this essay, it can be started via new legislation, deregulation (suppressing a pre-existent law) or simply by not legislating at all, which creates a legal gap. Legislation can be based on principles or rules. Furthermore, when considering the ways at the disposal of regulators, there is a possibility of a regulatory policy mixing each one of the strategies set forth above. For instance, a new piece of legislation might suppress a previous law but at the same time create new rules about the same object.

Ideally, regulatory bodies should be aware of the state of the art of the regulation object, trace objectives intended for the legislation and also carefully estimate the impacts of the proposed regulation. In addition, responsible agents need to observe the competency limitations inherent to each regulatory entity's legal framework.

Specifically, about the competency to regulate and in the case of the European Union, a *sui generis* supranational organization, competency and hierarchy draws value from the delegated subjects from Member-States, outside of which the EU would be barred from regulating. But this restriction is also true for traditional states, mainly democratic ones.

For instance, in the United States, where each regulatory agent needs to observe the legal framework of the American Federation, with some competencies shared and others exclusive of federal, state or local governments. And in the case of China, it is represented in the form of “fragmented authoritarianism”, in which the central government delegates powers to local governments, all the while sharing power between central government agencies (HINE, FLORIDI, 2024).

It is noteworthy there is no international regulatory agency with complete and binding jurisdiction over AI. Although some international organizations are currently searching for agreements on a multilateral scale, none to this date may suppress the authority of national governments to legislate themselves and enforce different provisions of their choosing.

The various practical uses of AI, current and in development, serve to show that AI is a general term encompassing a very large scope of different applications and technologies and there is no international agreement on one definition only. Rather, AI is similar to an open-ended concept lacking a precise definition from the technical and legal perspectives (FISCHER, PISKORZ-RYŃ, 2021, p. 420).

Despite its widespread use, AI remains controversial and ill-defined (FRANKE, 2021, p. 5). There are currently various definitions of AI and it is constantly under update as a consequence of rapid progress in the field. It should also be noted that for a certain part of the literature, Artificial Intelligence at its current stage does not work on its own, but rather as a “strategic catalyst” of new features and applications (FIOTT, LINDSTROM, 2018, p. 3), similar to the role played by electric energy at the turn of the XXI century (FRANKE, 2021, p. 3).

To further complicate the (un)definition of AI, the range of applications that could be brought under its scope is continuously subject to change. Applications that initially were ascribed to it, over time and frequent use by the public, lost their

status of “intelligent” and became normalized, being excluded from the AI field (SMUHA, 2021, p. 63). Or as McCarthy puts it in a simple and yet clarifying manner: “[a]s soon as it works, no one calls it AI anymore” (*apud* VARDI, 2012).

Defining AI in the first place is paramount because to regulate it, one must establish a precise definition of the object which the regulation will fall upon. In the case of AI, though, there is still no widely accepted definition of what it is (DANAHER, 2015; SCHERER, 2015, p. 359). This is mainly due to the difficulty in defining “intelligent” (GURKAYNAK *et al.,* 2016, p. 753) and the artificiality of this intelligence. As well as the employment of expressions ranging from “autonomous”, “general” (as in AGI) and even “super”, which have no role in better defining or clarifying the object.

One of the most prominent textbooks on the field, written by Stuart Russell and Peter Norvig, ranks eight different definitions for AI, separated into four categories: *thinking humanly*, *thinking rationally*, *acting humanly* and *acting rationally*. The authors proceed to say that: “[d]ifferent people approach AI with different goals in mind. Two important questions to ask are: Are you concerned with thinking or behavior? Do you want to model humans or work from an ideal standard?[22]” (RUSSELL, NORVIG, 2010, p. 29).

Several issues arise from the (un)definition of AI regarding regulation [23]. First, it becomes more difficult to effectively compare AI policies between

[22] As John McCarthy puts it, there is no solid definition of intelligence that does not depend on relating it to human intelligence. And according to him, this is because “(…) we cannot yet characterize in general what kinds of computational procedures we want to call intelligent”. (MCCARTHY, 2004, p. 2).

[23] To guide this work and considering the research focus on the EU, this essay advocates for the European definition of Artificial Intelligence as set out in the “Artificial Intelligence for Europe”, published by the European Commission in April 2018. In this policy, the Commission states that:

“[a]rtificial intelligence (AI) refers to systems that display intelligent behaviour by analyzing their environment and taking actions – with some degree of autonomy – to achieve specific goals. AI-based systems can be purely software-based, acting in the virtual world (voice assistants, image analysis software, search engines, speech and face recognition systems) or AI can be

countries, as the definitions of AI will vary. This leaves space for governments to adopt the AI interpretation that better suits them or that better leverages their position.

Second, when regulating AI, governments might find it difficult to pinpoint which applications or companies might be affected and therefore the precise effects if the regulation is enacted. Risks and benefits arising from AI might also come into light via a different technology not qualified as AI. In this respect, a regulatory policy might try to prevent or stimulate a certain objective, but by doing so might also affect a different technology, which can also benefit a non-AI application, or hamper an AI development.

Such an issue raises the topic of technology-neutral regulation which does not focus on one specific technology. The EU's GDPR is a good example of this, as it intends to protect the processing of personal data irrespective of the technology that is used. By doing so, the EU avoids touching upon the (un)definition of AI and rather bases the regulation on the risks it wishes to avoid and the safeguards it intends to secure.

In addition, AI applications possess certain characteristics that also make it more difficult to regulate them. For instance, the ability of self-learning might generate unpredictable results, and the decision-making process of AI frequently is not transparent, which also contributes to enhancing this problem.

Third, AI encompasses a host of different applications, ranging from autonomous cars, chatbots and content-creating software to name just a few. Evidently, there are different risks and benefits in each sector. This issue raises the question of whether it is feasible to try regulating AI as a whole. Although a general regulatory approach could be done in certain contexts with limited

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embedded in hardware devices (advanced robots, autonomous cars, drones or Internet of Things applications)." (EUROPEAN COMMISSION, 2018).

adverse effects, there continues to be a risk of generating unintended consequences, especially in a fast-moving technology field such as AI. Smuha (2021, p. 66) rightly points out that: "(…) demarcation of the scope of any regulatory measure for AI is thus crucial, not only in terms of delimiting 'AI-systems' as opposed to other technologies, but also to delimit which AI-application or which context is being targeted".

Fourth, albeit not least, AI applications raise the applicability of several areas of the law. For instance, an autonomous car causing an accident with injuries attracts civil law competencies, but an AI software that creates plagiarized content attracts Intellectual Property law. With this in mind, we note that the risks and benefits of AI engage with several legal fields that might need to update their content of norms to adequately tackle this new technology. Furthermore, one same application might cause effects related to multiple legal areas, raising questions about possible gaps and the coherence of the legal framework to address a diverse set of problems.

As a result, when regulating AI, it seems to be necessary to analyze the legal system in both a focused and holistic manner. To focus on affected legal fields, remedies and norm application, but without losing sight of the general coherence of the legal system, and how regulating AI in a certain legal field might affect another one in a crisscross manner. Naturally, these considerations are deeper and more complex, as the scope of this essay limits the dedication to this topic specifically. However, it could be suggested as a future avenue of investigation.

4.3 Elements that foster regulatory competition

The regulatory race to AI is fostered and made possible by diverse factors. The development and use of AI applications inherently carries benefits but also legal and ethical risks of infringing upon individuals' fundamental rights such as privacy, non-discrimination, and in essence might pose a threat to people's

physical security, as discussed earlier in this essay. Therefore, government agencies worldwide are increasingly pressured to minimize the risks and maximize the benefits of AI.

In addition, globalization also plays a relevant part in favoring AI regulation. Some factors to note are the interdependency of economies via the global value chain, and the interest of governments to export their national technology standards and make them globally used. But also private companies' ambitions to export their products and services worldwide and the growing realization of media and civil society to the risks of AI and the costs of not regulating the sector.

Although the AI impacts are large and complex, the shared conclusion that it will massively revolutionize society, the economy and the military has instigated nations to join the competition and develop new technologies in as many sectors as possible (BRATBERG *et al*., 2020, p. 8). In this regard, leading the "race to AI" appears to be viewed not only in terms of securing economic advantages but at some times almost like an existential need, in which the traditional posturing of national security is complemented by an economic security need (SMUHA, 2019, p. 58), especially given the rise of AI military applications.

Furthermore, the opportunity cost of missing the chance with this new technology also plays a part in pushing countries to join such a regulatory race. The Policy and Investment Recommendations of the European Commission's High-Level Expert Group on AI highlights such a fact:

> *An assessment of the economic activity growth due to AI until 2030 shows that the value at stake for Europe is significant: if no actions are taken, the EU28 will suffer a deterioration of its innovation capital, which would result in a loss of €400 billion in cumulative added value to GDP by 2030.* (EUROPEAN COMMISSION, 2019a, p. 43).

Essentially for this essay, regulation appears to be a solution for the pressuring needs aforementioned. One that provides assurances to the public,

government and stakeholders regarding the risks of AI, and that also promotes its ethical and safe use, establishing best practices and sanctions for infringers.

In this sense, regulation can potentially increase trust in AI and propel more users to adopt it, therefore increasing economic and societal gains. Taking the lead in establishing a solid and adequate AI regulatory framework should probably make possible even more substantial gains, hence another reason for propelling regulatory agencies to be the first ones to enact it (SMUHA, 2019, p. 59).

In this view, countries aim to be the first to strike a unique regulatory balance that can render them competitive on the global AI market whilst safeguarding their values, principles and the rights of their citizens in the use and development of AI applications. The specific combination that each country puts to its “regulatory formula” kickstarts and maintains such regulatory competition.

The regulatory competition poses two dimensions, one internal and the other external (SMUHA, 2021). At the internal level, competing countries aim to trigger the “first-mover” advantage, in an attempt to reap more benefits from AI if being the first one to regulate it in an adequate framework, thus gaining an advantage over others. Influential is an important piece of the adequation, meaning the power to convince other countries to follow suit with regulatory convergence, as the EU achieved with the GDPR from 2018 forward.

The thinking is that any foreign company operating (or planning to) in the jurisdiction of the first-mover will necessarily have to adequate itself to the new standards. The critical part of this thinking is that foreign companies compliant with new measures would in turn pressure their local governments to adopt similar standards as a way to “level the field” with other domestic companies that do not operate in the first-mover’s jurisdiction. However, by doing this, companies located in the first-mover territory that have already adapted and internalized the costs of the ensued regulation would therefore be in a position of advantage over

foreign companies, in a comparatively cost-advantageous position. In this regard, companies that lead the race are posed to reap more gains than companies and countries that only absorb the standards from the first-mover.

The second dimension happens at the external level and represents a regulatory convergence. Taking the example above, bringing a foreign government's legislation up to standards with the first-mover would consequently represent a regulatory convergence, thus fulfilling the goal of the first-mover to spread and influence its regulatory standards to other countries.

Of course, the level of convergence depends on several factors[24], for instance the influence and quality of the proposed regulation from the first-mover, and on the force of its market. Taking the GDPR as an example, the EU's reputation as a stringent (quality) regulator predates the GDPR and includes several other fields such as agriculture, economic competition and social benefits.

In addition, counting with a Single Market 500 million strong and the biggest trading bloc in the world deals a heavy weight to convince and propel other countries to converge with EU standards, and not only data protection. Finally, albeit not exhaustively, GDPR's massive sanctions and applicability even outside of EU jurisdiction in some specific cases also play a part in this phenomenon.

In this regard, the growing relevance of AI's risks and benefits and its inherently global nature favors multilateral negotiations towards establishing minimal standards, such as the G20, OECD and a diverse set of bilateral

[24] Smuha (2021, p. 80) rightly points out the level of convergence is also related to the of proximity between competing countries in terms of values. In this regard, competitors countries competing on AI regulation albeit still share in some degree societal and economic principles should in theory be able to foster a closer convergence. The situation would be different when competing countries also diverge at the level of these values and principles.

meetings. This effort is complemented by actions from private companies (including the big GAFAM players) and NGOs, particularly international standards organizations such as ISO or IEEE.

The international standards organizations seem to become a new arena in which major powers compete to enshrine their national approaches onto the rest of the world, making them global and enforceable, at the same time reaping comparative advantages against competitors. This is in line with the thinking of the first-mover, since the “winning” country, if ever there will be one, would enjoy considerable benefits of exporting their regulatory model as the global standard. Being the first one “to the top” also means innovating first, internalizing costs and enjoying new market opportunities first.

The realization of the shared desire to adequately regulate AI, maximizing benefits and reducing risks, the force of global markets and companies to be able to export products and services worldwide without grave barriers, as well as the attention from media and civil society to upcoming challenges of this new technology, are contributing factors to the phenomenon of regulatory convergence. At least for now, it seems a minimal standard convergence is taking place at international fora to consecrate a trustworthy AI, albeit in different manners and views.

Notwithstanding the arguments that point to a regulatory convergence, it is important to understand that achieving agreement even on minimal global standards for AI is yet quite distant. Although AI is not exactly a new technology, the consciousness of AI risks and benefits and the appeal to regulate AI under the scope of the first-mover advantages are recent developments.

The High-Level Expert Group on AI set up by the European Commission also recognizes the novelty of AI’s impacts on the world and how it impacts the proposal to regulate it:

> *"Yet little evidence is available to inform policy-making, due to the novelty of the technology, the lack of thorough and systematic understanding of its impacts and associated business models, and the unpredictability of its uptake, development and evolution even in the short term."* (EUROPEAN COMMISSION, 2019b).

Therefore, when considering the arguments for regulatory competition, it is important to keep in mind the uncertainty surrounding AI's effects, which are not completely known. The arguments discussed in this section prepare the way for the next main topic of this essay: that the technological dispute to develop AI is *in tandem* with regulatory competition among great powers.

5. THE REGULATORY APPROACHES TO AI

5.1 Overview of the competition

Before going into details about the regulatory approaches of the EU, China and the USA, it is important to keep in mind the natural limitations of this study. This essay will analyze a fragment of legislation, policy proposals concerning AI, and compare the strategies of the aforementioned entities.

The selection of which documents are studied is guided by relevance to this essay's objectives and the relevance of the regulation itself, in terms of approach and impacts on the field, supported by other sources in academia. In consequence, we do not claim to have analyzed every policy or regulation proposal there is, nor all of the other academic works in this respect.

In addition, analysis of China and the US is incidental, based on a limited set of policies to form a comparative analysis. As the focus of this study is the EU, the former are herein comprised in a limited manner. This is a natural limitation to other studies as well, by time, research objectives and human

capacity[25]. However, as this essay discusses AI, a field of study still in development, a hot topic in the past few years and with a growing number of publications, there are certainly many possibilities for future investigation, for instance a deeper study on the US and China AI approaches.

Starting with the EU back in 2018, when following political leaders' calls, the European Commission published the "Artificial Intelligence for Europe" in which it puts forward propositions to lead the development and use of AI via "a coordinated approach to make the most of the opportunities (…) and to address the new challenges that it brings" (EUROPEAN COMMISSION, 2018a). This policy also highlights that "fierce international competition requires coordinated action for the EU to be at the forefront of AI development" (EUROPEAN COMMISSION, 2018b).

China also launched in 2017 the "New Generation Artificial Intelligence Development Plan", aiming to achieve a leading position in the world by "building on China's first-mover advantage in the development of AI" (CHINA STATE COUNCIL, 2017).

The United States, on the other hand, issued in 2019 under the Trump Administration the "Executive Order on Maintaining American Leadership in Artificial Intelligence". In which it is stated: "[c]ontinued American leadership in AI is of paramount importance to maintaining the economic and national security of the United States and to shaping the global evolution of AI in a manner consistent with our Nation's values, policies, and priorities" (WHITE HOUSE, 2019).

By looking at those policy excerpts, the ambitions of all three global powers to influence the development standards of AI according to the values and

[25] Wolff (2019) raises the possibility of an AI tool to conduct comparative law studies perhaps better than a human could, analyzing thousands of documents at unimaginable speed. This type of tool does not currently exist, but perhaps it can (and probably will) in the future, as Wolff also concludes. That is enough to say that AI, being the object of this study, might in the future study itself in an autonomous way, "taking over" the human researcher.

principles of each one becomes evident. The ever-expanding application of AI favors the leverage of early adopters to reap the most benefits from the technology. Therefore, taking the lead means taking a bigger share of control of this critical future technology, excluding or at least limiting the capabilities of other competing players.

However, a good part of the literature points out that the US and China are the *de facto* leaders of AI at the current moment, with the EU lagging behind (CALDERARO *et al.*, 2022; BELLANOVA *et al.*, 2022). Bratberg *et al.* (2020, p. 6) argue the underperformance of the EU in this is mainly due to the "fragmentation of the EU's digital market, difficulties in attracting human capital and external investment, and the lack of commercial competitiveness."

First, the lack of a major technological industry such as the US Silicon Valley or China's Hi-Tech Industrial Belt (Beijing-Tianjin-Shijiazhuang) severely restricts the EU from pushing for an active leading role in shaping the global standards for AI, and this scenario does not seem likely to change in the near future (CALDERARO *et al.*, 2022). Especially considering that in a fast-moving and unpredictable domain such as AI, technology often evolves quicker than regulatory policy, therefore the leading industrial base country has an advantage in terms of global standard-setting regulatory power, in comparison to a mostly regulatory power as the EU seems to be.

Second is the AI investment gap between the EU, the US and China. Continent-wide, in the EU external investments in 2016 reached 4 billion USD, while in Asia it fared at 12 billion USD and in North America 23 billion USD (BUGHIN *et al.*, 2017). Even by stretching the time period to 2013-2021, US private investment in AI companies reaches a clear leading position with 52 billion USD, China ranks second place with 17 billion USD, a third of US figures. However the EU comes very far in the competition with a comparatively small batch of 6 billion USD of private investment in AI companies.

Third, the important private investment gap between the three competing powers serves to illustrate the conclusions of the EU Joint Research Centre on the AI Worldwide Ecosystem, a big picture of the competition scenario between 2009-2018.

According to the report, the US leads globally in terms of AI industry players in absolute numbers. China on the other hand comes second in the number of AI industry players but surpasses the US to a leading world position when it comes to the highest number of research institutes in AI and the number of patent applications. The EU leads in AI research output, but its industrial players show less innovation in comparison to the US and China, which arguably demonstrate a slower capacity to convert European research output into industrial innovative practices (SAMOILI *et al.*, 2020).

In an extensive study, Castro *et al.* (2019) analyzed the EU, US and China in terms of research, talent, adoption, data and hardware. In an overview, the authors conclude the US leads AI in terms of talent, research, development and hardware. China seems to be catching up with the US, leading AI in the fields of adoption and data. While the EU lags behind in the race, without a leading position in any of the areas of AI in the aforementioned study.

The economic data seems to justify the EU's approach. As discussed in this essay, the EU is increasingly posturing as a digital sovereign entity over AI, carved around the protection and promotion of European civil rights and core values. This approach is reflected at policy and political levels, via the legislative procedure and numerous discourses of senior EU leaders since at least 2018.

However, it appears the EU has few other options other than what is currently proposing. When we consider the US approach of a liberal market development of AI, leading in the majority of AI fields, and China leading on data, while catching up with the US, Europe is trailing a long way behind both powers, with no leading position in any AI metric as seen above. This leads to the

conclusion that the EU is compelled to take a differentiating stance without counting on the financial or data metrics of AI since it is so far behind in the race (CALDERARO, BLUMFELDE, 2022, p. 426).

In this sense, the EU's ambition to influence AI global standards amidst a regulatory competition with China and the USA represents a strategy for gaining relevance in the global arena, by playing with what is has best. Since the risk of not taking action could be diminishing political influence. This framework is supported by Joseph Borrell when he proposed that strategic autonomy is fundamental to the EU's own political survival:

> *The conclusion is straightforward. If we do not act together now, we will become irrelevant as many have argued cogently. Strategic autonomy is, in this perspective, a process of political survival. In such a context, our traditional alliances remain essential. However, they will not be enough. Since power gaps are shrinking, the world will become more transactional and all powers, including Europe, will tend to be more transactional too. This is an unescapable truth. (BORRELL, 2020).*

Thus, the EU "plays its hand" with what it knows best how to do: to regulate AI under an ethical and trustworthy approach. We recognize this strategy fits well with the European reputation as a "regulatory giant" (CHRISTAKIS, 2020) and a "benign global hegemon" (BRADFORD, 2020) discussed earlier in this work. Furthermore, the AI regulatory race is part of a larger competition for economic and political survival, one that touches on defense, national security and geopolitical relevance in the future.

5.2 EU

We move on to deepen the study of the EU's regulatory approach to AI. The European legislative process around AI has gone through three different phases over the last ten years (JUSTO-HANANI, 2022).

The first phase was marked by political uncertainty about how to tackle the rapid technological advances in this area (FRANKE, 2021, p. 2). At this stage, the EU approach to AI was still under debate, and the EU's supposed digital

sovereignty was still to be claimed and affirmed before the world stage. It was kickstarted more precisely in 2017 when the European Council requested the European Commission to propose an ‘European approach” to AI by 2018 (EUROPEAN COUNCIL, 2017).

In this first phase, the main objective was to balance out the regulatory fragmentation between Member-States due to different national approaches to AI. Following recommendations by the High-Level Expert Group (HLEG), established by the European Commission in 2018, the proposed solution was to foster an “ecosystem of trust” in AI.

Drawing value from the core principles of the EU (fundamental rights, democracy and the rule of law), the HLEG proposed anchoring the European approach under an AI that should be lawful, ethical and robust (HLEG, 2019). This proposal gained political traction as the European Commission made public its intention to disseminate this approach globally and try to reach a consensus on ethical AI at the international level (EUROPEAN COMMISSION, 2019c).

Furthermore, the HLEG advocated for a human-centric AI, “resting on a commitment to their use in the service of humanity and the common good, to improve human welfare and freedom” (HLEG, 2019). In this sense, the HLEG proposed incorporating the human-centric approach of AI by design into products and services as an added-value, market advantage, which aims to maximize the benefits of AI while preventing and minimizing the risks. But also to differentiate the European proposal from the other main contenders, China and the USA.

As put very clearly by the European Commission in a 2019 communication on building trust in AI (2019c): “[b]uilding on its reputation for safe and high-quality products, Europe’s ethical approach to AI strengthens citizens’ trust in the digital development and aims at building a competitive advantage for European AI companies.”

This makes clear, that since the start the EU was already foreseeing a regulatory competition (albeit convergently) and envisaging its role as a global leader in a human-centric approach to AI:

> *The EU must ensure that AI is developed and applied in an appropriate framework which promotes innovation and respects the Union's values and fundamental rights. The EU is also well placed to lead this debate on a global stage. This is how the EU can make a difference – and be the champion of an approach to AI that benefits people and society as a whole.* (EUROPEAN COMMISSION, 2018a).

Arguably one of the most successful examples of regulatory export from the EU, the GDPR was – mostly at its beginnings – criticized as putting Europe at a disadvantage in comparison to other world tech powers, mainly the US and China (CHIVOT *et al.*, 2019). At the time of the legislative process, that the GDPR's stringent measures, in particular the restricted legal cases in which personal data can be processed, could cause a data scarcity that could be put to use to train AI applications.

However, GDPR proved to be a beacon for regulatory convergence in this area, albeit a slow one. Numerous other countries, including some outside of Europe, have enacted personal data protection assurances similar or "adequate" according to GDPR standards, hence permitting the free flow of data between the EU with those "adequate" foreign frameworks. Concerns for privacy count, but it is clear the weight of EU posturing on the world as a high-level standard-setting for personal privacy did influence foreign adoption of GDPR standards (SCOTT *et al.*, 2018).

Currently, the EU is trying a similar strategy with the trustworthy AI proposal, in which it appears to be moving from soft law measures (voluntary application) to mandatory standards aiming to secure its AI approach (SMUHA, 2021, p. 75). Considering the growing traction of tackling AI's legal and ethical dilemmas in the global arena, the EU AI strategy seems to be an attempt to trigger the first-mover regulatory benefits.

The second phase started in 2019 after Ursula von der Leyen took office as president of the European Commission. Under this phase, the EU's ambition of leading and disseminating to the world a human-centric approach to AI would be refined and consolidated into the first guiding policy instruments.

Notably, the starting quote in this essay from Margrethe Vestager[26] was uttered during her confirmation hearing in 2019. It serves to show the political momentum among senior European leaders in giving traction to the EU's political objective of reaffirming itself as a geopolitical player. Von der Leyen herself took office by saying her mandate would preclude a "geopolitical commission" (2019).

The consolidation of the EU's view on AI started with the "White Paper on Artificial Intelligence" (EUROPEAN COMMISSION, 2020c). This policy established a three-pronged axis: first, to revise existing EU regulations and propose new policies when necessary. Second, to turn into reality the EU's ambition of disseminating its core principles of human-centric approach to AI, taking the GDPR as a prime example. Third, to consolidate a risk-based model to AI applications, in which high-risk AI features would be obliged to go through mandatory checks or prior conformity assessment.

The EU aims to safeguard a trustworthy AI, meaning to secure a technology that meets adequate standards of legal and ethical principles, coupled with a robust framework. This definition was first reached by the European Commission's High-Level Expert Group on AI, but it has been gaining traction outside of the EU too. This concept presupposes a series of measures intended to foster accountability, transparency and protection of user's privacy. In the 2019 Ethics Guidelines for Trustworthy AI, the aforementioned EU group of experts published that a trustworthy AI:

[26] "And some say that the Chinese have all the data and the Americans have all the money. But when I see what we have going for us in Europe, it's that we have purpose". (EUROPEAN PARLIAMENT, 2019b)

> *"(…) should be met throughout the system's entire life cycle: (1) it should be lawful, complying with all applicable laws and regulations (2) it should be ethical, ensuring adherence to ethical principles and values and (3) it should be robust, both from a technical and social perspective since, even with good intentions, AI systems can cause unintentional harm."* (EUROPEAN COMMISSION, 2019b).

Fostering trust in AI[27] is paramount to advancing user adoption, limiting risks and maximizing the benefits of the technology. It is also remarkable how this proposal from the EU gained traction across the globe to the point of being a priority to other foreign governments. This might be explained by the simple fact that users and stakeholders benefit from a technology that can be trusted, which represents an added value for those who advocate for it, and a possible loss of market share for those who do not.

The third phase is a further step into consolidating the EU as a geopolitical leading player in the world of AI. It lasts until current days and goes through constant evolution by way of new policy proposals, speeches by senior EU leaders, and also reactions from other countries, like the US and China.

One of the most remarkable policies in the third phase, in April 2021, the European Commission proposed to the European Parliament and Council the "Artificial Intelligence Act" (COM(2021) 206 final) to establish "harmonized rules" for its use, by making the introduction of AI applications on the European market subject to compliance approval on four risk scales, with applications of "unacceptable" risk being prohibited.

On 14 June 2023, MEPs adopted Parliament's negotiating position on the AI Act. And in December 2023 the European Parliament and the Council of the

[27] In this sense, trust does not mean a personal one. Rather, this concept involves the notion of an AI that can be hold accountable towards the government and civil society in terms of technical, legal and ethical standards, including measures of oversight and governance mechanisms (SMUHA, 2021, p. 68). In addition, making AI reliable also entails controls over the people that manage this technology in a specific context, company or application, be it in terms of purpose, business model or market segment.

EU reached a political agreement on the AI Act. Currently, the text is in the process of being formally adopted and translated.

The AI Act will come into effect 20 days after publication in the EU's Official Journal and will be fully applicable within 2 years, with some exceptions: prohibitions will take effect after six months, the governance rules and the obligations for general-purpose AI models become applicable after 12 months and the rules for AI systems - embedded into regulated products - will apply after 36 months (EUROPEAN COMMISSION, 2024a).

To oversee the AI Act enforcement and implementation within Member-States, the EU Commission has also established the European AI Office in February 2024. The office also has by mission to foster collaboration between multiple stakeholders, engaging dialogue and advancing the EU agenda to lead AI and spread its approach to the world (EUROPEAN COMMISSION, 2024a).

The proposal of the AI Act marks a significant moment in the development of such a comprehensive regulatory framework (SMUHA, 2019). It has been drafted with the primary aim of establishing clear principles to guide the responsible and ethical use of AI, with particular emphasis on two essential pillars: transparency and accountability (ULNICANE, 2022).

Transparency, in this context, is considered a fundamental ethical imperative (LARSSON & HEINTZ, 2020). It translates the need to ensure that AI systems are understandable and that the decision-making processes they adopt are open to scrutiny (JUSTO-HANANI, 2022).

This means that AI systems must be designed in a way that allows users and stakeholders to understand how they work, how they reach certain conclusions and how they use the data (COHEN *et al.,* 2020). This not only increases trust in AI technologies but also offers the opportunity to detect and correct biases or errors in the algorithms.

Accountability implies that developers and users of AI systems are responsible for their actions concerning this technology. This involves taking responsibility for negative consequences that may arise from the inappropriate or harmful use of AI (YARA *et al.*, 2021). Accountability is not limited to companies or organizations that develop or use AI systems; it also applies to individuals who may be affected by decisions made by these systems (VEALE *et al.*, 2021).

The European Union's AI Act also prohibits high-risk applications, such as the creation of autonomous AI systems with potentially significant and harmful impacts, which reflects the EU's prominent concern with ensuring that AI is used for beneficial purposes and that it does not compromise the safety and rights of individuals (YARA *et al.,* 2021).

First, this piece of legislation recognizes that AI, when applied inappropriately or unregulated, can have serious and negative consequences (ULNICANE, 2022). Autonomous AI systems, especially those with a high level of autonomy and the ability to make crucial decisions, pose a significant risk when they are not properly controlled and supervised. Proposing to ban these high-risk practices is an important mechanism for mitigating such threats (SMUHA, 2019).

In addition, the AI Act proposes to establish safeguards that prevent the undue exploitation of AI in sensitive contexts. This includes concerns related to mass surveillance, in which AI can be used to monitor and control individuals in an invasive manner, and to decisions crucial to human life, such as those related to health, security and fundamental rights (HACKER, 2023).

Furthermore, the EU Commission proposed a civil liability framework for AI, currently under development after public consultations, as well as a revision of sectoral safety legislation (for instance, the Machinery Regulation and the General Product Safety Directive) (EUROPEAN COMMISSION, 2024a).

In the defense sector, in March 2022, the European Council approved the Strategic Security and Defense Compass for the Next Decade, intending to make the EU a "stronger and more capable" security provider. It foresees new investments to "substantially increase" military mobility, including the use of AI, develop and "make intensive use" of new technologies, such as AI, to achieve computer superiority, and prepare for the "future battlefield of the next technological generation" (COUNCIL OF THE EUROPEAN UNION, 2022).

In addition, the European Commission also seeks to develop AI applications aimed at achieving the *European Green Deal*. Through targeted programs, in particular the *Digital Europe Programme (DEP)*, *Connecting Europe Facility (CEF2)*, *Horizon Europe* and the *Space Programme*, which focus on leveraging investment in research, innovation and the adoption of AI applications.

Investment-wise, the EU is keen to fund the development of AI for security and defense applications. In January 2021, the European Defense Fund came into operation, provided for in the 2021-2027 EU budget, with an overall allocation of €8 billion, of which 4-8% will be earmarked for disruptive technologies (EUROPEAN COMMISSION, 2022).

Under the Horizon Europe and Digital Europe programs, the European Commission has decided to invest a minimum of €1 billion annually in Research and Development of AI applications which has been accomplished for 2021 and 2022 (EUROPEAN COMMISSION, 2024a).

Furthermore, to boost the EU's industrial base in AI, the European Commission announced the EU as a whole (comprising private and public players) should invest €20 billion by the end of 2020, and more €20 billion per year during the next ten years, which it has called the "digital decade". The recovery plan following the COVID-19 pandemic also allocates €134 billion for digital. However, to this date, the effective benefits of both spending targets are

still unclear, although the recovery plan has allocated €4.4 billion up until September 2023 (EUROPEAN COMMISSION, 2024b).

The EU plays an active role in international organizations and forums, such as the United Nations and the World Trade Organization (WTO), where it promotes its policies and seeks to build consensus around ethical and responsible regulations. The EU also cooperates with other nations and regions to set global standards on AI-related issues such as data privacy, cybersecurity and human rights (BRAJOVIC *et al.,* 2023).

The EU's pursuit of this influence and sovereignty in global issues, such as the regulation of AI, allows different advantages and strategic objectives to be achieved. Seeking influence in global regulations allows the EU to promote and protect these values worldwide, which is consistent with its vision of a fairer world that respects fundamental rights (PALMSTORFER, 2021).

Compliance with global regulations aligned with EU standards simplifies international expansion for European companies. When standards are similar around the world, the complexity and costs of adapting to different rules in each country are avoided, facilitating access to international markets (HEDLUND, 2022). In addition, European companies can use compliance with ethical and responsible EU regulations as a competitive added-value factor to products and services. This attracts consumers and business partners who value ethics and transparency in AI practices, strengthening these companies' position in the global market (PALMSTORFER, 2021).

The EU's leadership in the ethical regulation of AI also encourages responsible innovation. Companies are motivated to develop AI solutions that meet established ethical standards, which can result in safer and more reliable technologies (DIXON, 2023). Protecting reputation and brand is another advantage for European companies that operate in compliance with ethical AI regulations. In an environment where data privacy scandals and inappropriate

use of technologies can damage a company's image, compliance with ethical regulations is an important safeguard (TADDEO *et al.*, 2021).

5.2 China

China’s interest in developing AI traces back to 2013, but the full realization of its need came in 2016 when AlphaGo defeated the champion Lee Sedol, as seen earlier in this essay. Thus in 2017, the Chinese State Council issued the “New Generation AI Development Plan” (AIDP). Chinese policies reflect the desire to achieve a leading position in AI via balancing social controls and technological innovation (HINE, FLORIDI, 2024).

The aforementioned plan foresees China’s most important goal as achieving global leadership position in developing AI via milestones. In 2020, the objective was to gain access to the “first echelon” of AI contenders; in 2025 it will be to “achieve major breakthroughs in basic theories for AI” and propose regulations; by 2030 the objective is to “achieve world-leading levels, making China the world’s primary AI innovation center” (STATE COUNCIL, 2017). Naturally, to reach these milestones China needs to take a big leap and take over the leading position from the US, which is at the forefront of many AI metrics as discussed earlier in this essay.

In contrast to the US and EU, where policies and priorities often change along with government elections, China is an authoritarian state with no change of leadership at the national level, which has remained with Chairman Xi Jinping since 2012. Due to this fact, there are no major changes in policy directions, but rather a partition of attributions between national and local levels. In which the central Chinese government sets out general guidelines and goals, and delegates its execution to local officials (HINE, FLORIDI, 2024).

Following the AIDP’s first milestone in 2020, no following plan was launched by China. Rather, it is likely AI was encompassed by the general

scientific and technological “Five-Year Plan for the National Economic and Social Development of the People’s Republic of China and the Outline of the Long-Term Goals for 2035”. This decision seems to indicate that AI policies were convoluted back into a general fold, although with distinctive importance and still regulated by the AIDP.

China advocates some AI principles with a distinctive view in each one. For instance, market dominance is not promoted as a laissez-faire, liberal market attitude as it is prevailing in the US, but rather a strategy to “better take advantage of government planning and guidance”. While “innovation” and achieving breakthroughs are linked to social harmony, meaning that AI potentials are to be capped due to possible social unrest.

China regards AI as a tool and a threat to social stability. While the technology could upend the balance of social power, it also enhances the central government’s capability of social control and monitoring on a large and unprecedented scale.

Funding for AI in China can come from different levels. At the national one, it is primarily through the National Natural Science Foundation of China, akin to the US NSF. However, national funding is concentrated in big cities and research institutions, which creates funding gaps in relation to smaller cities and regions (HINE, FLORIDI, 2024).

Private investment in AI also exists in China, albeit under rigorous state oversight, common to the whole of society and economy. In this sense, China has appointed leading private players (known as “national champions”) to steer the national AI goals with favored access to state funding, public data and projects. In turn, China’s central government has considerable power in shaping (and vetting) business activities.

China places a strong focus on the development and promotion of AI as a central part of its economic growth strategy and aims to achieve global leadership by 2030 (Ebers *et al.,* 2021), which strategy involves several key components:

- Massive Investment in Research and Development: This includes investments in universities, research institutions and technology companies (ROBERTS *et al.,* 2021b). Chinese cities such as Beijing and Shenzhen have become hubs for AI innovation, attracting significant talent and investment (ROBERTS *et al.,* 2023);

- Public-Private Sector Collaboration: The Chinese government seeks to promote collaboration between private companies and government institutions for AI research and development. This has resulted in strategic partnerships between technology companies and universities, boosting innovation in the country (ARENAL *et al.*, 2020);

- Focus on Practical Applications: China has a pragmatic approach to AI, focusing on applications in key sectors such as health, transportation, education and manufacturing. This emphasis has led to the rapid development of AI products and services aimed at the domestic and global markets (CHENG *et al.*, 2023);

- Leadership in Key Technologies: The country is also investing in key AI technologies such as machine learning and natural language processing. National companies such as Alibaba, Tencent and Baidu are actively competing for the development of such technologies (KANIA, 2021);

- Incentive policies: The government offers a series of incentives for technology companies, including tax breaks and financial support, to stimulate innovation in AI (ROBERTS *et al.,* 2023).

The Cyberspace Administration of China (CAC) also issued in 2019 ethical guidelines for Artificial Intelligence, which represent a relevant step forward in China's approach to the theme.

Those guidelines represent an effort by the Chinese government to address ethical concerns related to the development and use of AI in the country. However, its effective implementation faces challenges related to application and enforcement. The vast size of the country, along with the diversity of AI sectors and applications, makes it difficult to ensure that all organizations and companies will comply with the guidelines. In addition, its enforcement can be affected by political and economic trends, which raises concerns about the impartiality and integrity of the regulatory process (EBERS *et al.,* 2021).

China has also been criticized for its widespread use of facial recognition systems and large-scale data analysis to monitor the population, control access to public services and monitor political and social activities. This raises significant concerns about the privacy and civil liberties of Chinese citizens, as well as from people in regions where China has expanded its surveillance, such as Hong Kong (CHENG *et al.*, 2023).

In addition, the absence of effective public oversight and the lack of access to information regarding how these systems operate raises questions about the accountability of the Chinese authorities for the use of AI for mass surveillance purposes (ROBERTS *et al.,* 2023).

It's important to note that these guidelines are not legally binding. This means that, while it represents important guidance, it does not establish mandatory legal requirements that AI companies or developers need to follow. In any case, it serves at least as a signal of China's commitment to address ethical issues related to AI (CHENG *et al.*, 2023).

Overall, Chinese policies seem to instrumentalize AI as leverage for economic development, social cohesion and geopolitical rise. However, contrary to US policies, China does not seem to make explicit such competition, rather working silently on its goals. Under an authoritarian regime with no change in national leadership, the AI sector is subject to central state control and oversight, in contrast to the liberal market-driven economy of the US and social economic tenets of the EU.

Tight control of businesses allows the Chinese government to maintain the desired social stability, therefore capping AI breakthrough developments that might cause social unrest. In this sense, the primary importance of social stability also blocks the application of certain Chinese AI principles in situations of risk. For instance, the principle of “human value” for AI is not applied in favor of minorities such as the Uighurs, who are still targets of AI-supported profiling and detention (HINE, FLORIDI, 2024). At the same time, AI appears to be moving into a more general fold of tech applications, although with a distinctive importance under the AIDP.

5.3 The USA

In the United States of America, AI regulation stands out for its decentralized and fragmented approach, partly reflecting the country's federal system, in which regulatory policies are often issued at state and local levels as well, in a competence partition. This also implies that different sectors of the economy can be subject to specific rules, as a consequence of the decentralized regulation (RADU, 2021).

Like the EU, the US AI regulation went through three distinct phases, but in particular these coincide with the different presidential administrations in the last ten years. First, Barack Obama (2009-2016), then Donald Trump (2017-2020) and finally Joe Biden (2021-present).

Starting with the Obama administration, AI regulation was kickstarted in 2016 with the report “Preparing for the Future of Artificial Intelligence” together with the “National Artificial Intelligence Research and Development Strategic Plan”. The first one summarizes the “state of AI” in the US, possible uses, risks and benefits for the American society and government, while the latter addresses general R&D recommendations for AI.

At this phase, US policies do not constitute a solid regulatory framework of AI, but rather a general assessment of the situation, which is similar to the first EU regulatory phase, as discussed earlier. AI development was to be designed for a diverse audience, considering international customers and partners, with the US leading the technology globally (EXECUTIVE OFFICE OF THE PRESIDENT, 2016). However, US policies favored free-market self-regulation, which has been criticized (CATH *et al.*, 2018) and is in stark contrast to EU ethical and human rights concerns since its first AI phase in 2018.

In general, in this first phase the US federal government AI approach delegated the broad regulatory framework to the private sector, while the government would act directly only in areas with insufficient private sector activity. This again is in remarkable contrast with the EU approach, which prioritized active guidance from the EU Commission and Member-States.

Some elements of the first phase were maintained during the second phase after the Trump inauguration, notably the prioritization of free-market, liberal self-regulation and a highlight of American innovation (HINE, FLORIDI, 2024). In the first two years of his mandate, there was little policy production on AI, as the government advocated that minimal intervention would be best to foster AI technical development.

However, in 2019, in a context of increasing rivalry with China and releases in the press that the US was losing pace against its competitors, Trump issued the Executive Order “Maintaining American Leadership in Artificial Intelligence”.

It addresses the American initiative to drive AI development and global standards for AI while protecting American interests in terms of economy and national security.

Starting in 2019 the US government started to include “trustworthiness” as a guiding premise in AI development via two Executive Orders[28]. Curiously, the first one (nº 13859) was issued two months before the EU published its own “Ethics guidelines for trustworthy AI” while the latter came only in late 2020.

However, the US administration did not provide a solid basis for what it meant as “trust” for AI In fact, the second Executive Order did not contain a single reference to “trust” other than its title (HINE, FLORIDI, 2024). This is in contrast to the EU’s efforts to define and constantly update its proposal for AI trustworthiness as its flagship trademark.

US’ policies for AI under the Trump administration are driven primarily by economic competitiveness, the fairly vague idea of “American innovation”, and one which relegates normative principles “to the extent practicable” (Executive Order 13960). Furthermore, under this phase, the US federal government was focused on the geopolitical competition with China (although not explicitly named), sidelining the EU as a direct contender. Diversity values for AI, which were present under Obama documents, had its presence markedly reduced.

The third phase of AI policy in the US starts with the Biden administration in 2021. Notably in that same year the National Security Commission on Artificial Intelligence, first established under Trump, issued its “Final Report”. It defines AI competition as a “values competition” to be “embraced”, explicitly identifying China as the main contender, unlike documents from the Trump administration.

[28] Executive Order nº 13859 “Maintaining American Leadership in Artificial Intelligence” (February 2019) and Executive Order nº 13960: Promoting the Use of Trustworthy Artificial Intelligence in the Federal Government

It is notable how the Biden administration continued the anti-China rhetoric on a larger economic and political levels. In the AI field, this is represented by initiatives to contain China's progress (maintaining trade tariffs and export bans of tech assets) and at the same time by fostering the American AI industry (promoting domestic investment for microchip production) and by courting other countries as allies against China.

In 2021, the EU and the US established a Trade and Technology Council with an agenda for AI (EUROPEAN COMMISSION, 2021). In a dedicated section of the inaugural joint statement, both parties declared their compromise on developing a trustworthy AI under a human-centered approach "that reinforces shared democratic values and respects universal human rights". There is also a mutual recognition of both sides' efforts in legislating AI on a risk-based approach.

Furthermore, there is a rebuke (although covert) to China's AI policy when the statement refers to "significant concerns that authoritarian governments are piloting social scoring systems intending to implement social control at scale". Since "social scoring" is a notorious practice of the Chinese government, with increased use of AI applications for that matter.

In May of 2022, both parties agreed to launch an "AI Roadmap", to guide the development of tools and approaches to AI risk management and trustworthy AI. According to NIST's website (2024) "[i]t advances US and EU shared interest to support international standardization efforts and promote trustworthy AI on the basis of a shared dedication to democratic values and human rights."

In May 2023, the cooperation between the EU and the US under the AI Roadmap was further enhanced by the launch of three expert groups "to focus on AI terminology and taxonomy, standards and tools for trustworthy AI and risk management, and monitoring and measuring AI risks" (NIST, 2024). The groups proposed a list of 65 key definitions in AI with accompanying definitions by both the EU and the US, which should deepen their cooperation in the field.

Other areas impacted by AI were defined under the “Blueprint for an AI Bill of Rights”, published at the end of 2022. It lists five principles “that should guide the design, use, and deployment of automated systems” (WHITE HOUSE, 2022): safe and effective systems; algorithmic discrimination protections; data privacy; notice and explanation; human alternatives, consideration and fallback. The Blueprint’s ambitions are similar to those of the EU under the AI Act, although with significantly different approaches. However, this is a non-binding policy, thus carries limited regulatory effect.

From another angle, the Biden administration started in 2023 to better define the concept of trustworthy AI in a human-centric approach. Although it brings the US much closer to the EU’s position, the American definition is still fairly vague and more discursive than practical, as illustrated in the excerpt below from “Executive Order on the Safe, Secure, and Trustworthy Development and Use of Artificial Intelligence” (WHITE HOUSE, 2023):

> *“In the end, AI reflects the principles of the people who build it, the people who use it, and the data upon which it is built. I firmly believe that the power of our ideals; the foundations of our society; and the creativity, diversity, and decency of our people are the reasons that America thrived in past eras of rapid change. They are the reasons we will succeed again in this moment. We are more than capable of harnessing AI for justice, security, and opportunity for all.”* (WHITE HOUSE, 2023)

In regards to funding, it is noticeable the US counts mostly on private investments. Although recent policies under the Biden administration have for instance ordered the National Science Foundation to fund and launch AI-focused Engines, a historical trend of a laissez-faire attitude to AI and the remarkable market forces in the US. allow them to leave the funding of AI mostly to private agents.

The US is home to the largest tech corporations in the globe and possesses incredible market power world around with the dollar, digital infrastructure, research institutions and other AI metrics already discussed.

Therefore, it stands in contrast to funding strategies of the EU and China, with both having greater public funding participation than in the US.

5.4 Comparative insights

AI is one of the top regulatory priorities around the world, regarded as a crucial technological advancement that will reshape the geopolitical balance of power in the coming decades. Although it is fairly uncertain to foresee the consequences of AI to many different sectors of the economy and everyday life, the shared conclusion of its impact, the cost of “missing the opportunity” and the first-mover advantage in reaping more benefits out of it has sparked a global regulatory competition and three main contenders' approaches were analyzed in this essay.

In addition, the relevant risks posed by AI applications make it even more essential for regulators to compose an adequate framework for AI, one that promotes a safe, ethical and trustworthy use and development. Not only to minimize the risks but also to encourage adoption. To achieve this objective, and considering the challenges regulators face in this field, it will be necessary that each contender creates its own tailored “regulatory formula” that addresses their different national objectives, and at the same time maintains a holistic view of the regulatory impact across multiple legal areas (SMUHA, 2021).

By comparing the three regulations mentioned (EU, China and the United States), it is difficult to state categorically that one of them is "ahead" in the regulatory race or is better than the others.

In this context, the regulatory approach adopted by the European Union, China and the United States have occupied a central place in discussions about the future of AI and its global impact. Each of these global players, in a distinctive way, has been engaged in designing regulatory frameworks with the aim of dealing with the challenges and opportunities inherent to AI (COHEN *et al.*, 2020).

It is possible to see that approaches vary considerably between regions, reflecting different priorities and strategies. The EU focuses on ethics and the protection of human rights, China on balancing technological advancement with social stability, and the US on maintaining a leadership position under an approach of decentralization and non-state intervention (CIRCIUMARU, 2021).

AI regulation is a global challenge, and the lack of harmonization between approaches might hinder international cooperation and global compliance (SCHNEIDER, 2020). All three powers studied in this essay seek a delicate balance between promoting AI innovation, maximizing benefits and minimizing risks, while also ensuring that the technology is used ethically and responsibly under their own laws (KAMINSKI *et al.*, 2021), albeit with stark differences to the ethical safeguard substance. Challenges such as privacy, algorithmic discrimination and mass surveillance are common concerns in all regions, although addressed in different ways (CALDERARO *et al.*, 2022).

Since the European Union is composed of sovereign states, it takes a supranational approach to AI regulation, representing a collective will of the Member-States on AI issues. Meanwhile, the United States and China have more centralized approaches due to their nature as traditional states, which allows them to make decisions and implement regulations more directly (SCHNEIDER, 2020; CALDERARO *et al.*, 2022).

From another angle, we have observed all three contenders touching base on common concerns for AI, such as proposing a risk-based approach. China, despite its bad reputation for human rights and not being regarded as a democratic state, also hailed “human concerns” in its AI formulation.

But notably, regulatory intersection seems to be more likely among the EU and the US. Even though the EU is not a traditional state as the US is, both are rooted in democratic values, shared principles of human rights, capitalist market

economies and ultimately, they share a common historical tradition marked by the transit of people between the continents throughout the centuries.

China seems to be the outlier in the race when compared to both, considering not only the geographical and historical differences, but the sheer divide in national objectives, form of government, economies and also that China is poised to directly compete with the US for global AI leadership, a type of threat the EU currently does not pose.

In this sense, the EU and the US are likely to join forces on at least some proposals for AI under the belt of an “alliance of liberal democracies” proposed by Joe Biden, one that could counter Chinese ambitions to influence AI in another political direction, more autocratic and with an “overdose” of state control. Without prejudice to this view, a notable highlight is that the EU seems less concerned with China than the US, which might dictate the rhythm of cooperation.

High-level exchanges are already underway in multiple international fora such as the OECD, the UN, but most strikingly the bilateral Trade and Technology Council was established back in 2021. Which has already produced notable results in terms of standardizing AI technicalities, promoting scientific cooperation and joining forces to adequately regulate the technology.

Surely, the EU-US partnership will have to leave space for individual differences, notably on the state intervention levels, in consideration of the EU’s harder stance on issues such as antitrust rules, personal data protection, consumer rights and the environment, which in the tech sector mostly affects American giants. While Brussels advances its agenda, more friction with the US is expected.

More targeted forms of cooperation could be agreed such as investment screening procedures or common export policies of critical tech components, but both entities seem to be too divergent to find an agreement (FRANKE, 2021).

Less critical areas for scientific cooperation such as the Trade and Technology Council are likely to be the main channel of exchange.

When focusing on AI internal regulation, the EU approach is ethically superior by entrenching its citizens' rights under the concept of human-centric trustworthy AI. The EU AI Act will further fortify the European ethical governance via robust procedures under a risk-based analysis, especially those considered high-risk.

However, the EU's deficiency in investments compared to its competitors, along with a lack of representation of European companies among the tech giants undermine the Europeans' capabilities of influencing global standards for AI.

From another angle, the US is certainly competitive in the field of AI, ranking first in most metrics analyzed in this study, with a major representation of domestic companies among the first in the world that, in a certain sense, already promotes the "US view" of AI under the banner of market self-regulation. It is a major boost to achieving regulatory prominence.

Nonetheless, the liberal approach of the US regarding ethics and citizens' rights protection, relegating AI governance largely to the private sector, opens the risk of companies choosing to prioritize their interests first instead of society as a whole. While some measures proposed in the National AI Initiative Act, or the Blueprint for an AI Bill Of Rights seem to be a move in the right direction, ethical and human concerns are still second place in relation to national economic competitiveness, market forces and innovation (ROBERTS *et al.*, 2021).

6. CONCLUSIONS

The complexity of the regulatory issues surrounding Artificial Intelligence on the contemporary global stage is illustrated in the European Union's attempt

to set itself apart from the Chinese and American regulatory models. This quest for regulatory distinction represents a multifaceted and intricate effort that reflects not only the EU's ambitions to lead in AI governance but also the nuances and challenges of this endeavor (SMUHA *et al.,* 2021).

The EU's regulatory distinction is rooted in the fundamental premise of prioritizing ethical principles, transparency and accountability as cornerstones of its regulatory structure (RENDA, 2019). Unlike the pragmatic approach of China, which prioritizes the development of AI as a means to achieve innovation while balancing social stability, and the United States, which adopts a decentralized approach with an emphasis on maintaining a leadership position under the approach of state non-intervention, the EU seeks to establish clear standards that guarantee responsibility in the development and use of AI (ESTELLA, 2023).

The EU's central concern is not only to boost economic growth through AI but also to ensure the protection of human rights, ethical values and social integrity. This emphasis on ethics, combined with the prohibition of high-risk practices such as autonomous AI systems, is one of the most notable points of distinction from other countries' regulatory models (EBERS *et al.,* 2021). While many other global actors focus predominantly on the economic and technological potential of AI, the EU places central emphasis on ensuring that AI technology is developed and used in ways that are compatible with its core values (BARKANE, 2022).

Ethical consideration implies that, in pursuing the development and implementation of AI, the EU is unwilling to compromise ethical principles that are intrinsic to its vision of society. Thus, the emphasis on ethics involves ensuring that AI is used to promote the common good, respecting individual and collective rights, as well as human dignity (SMUHA *et al.,* 2021).

By setting itself apart in this way, the EU not only sets a high ethical standard for the development and use of AI but also influences the global debate

on AI governance (HACKER, 2023). Its ethical approach is seen as an attempt to set standards that can be adopted worldwide, promoting responsibility and consideration of the social and ethical impacts of AI on a global scale (ESTELLA, 2023).

This essay has explored the dilemma of proposing a UE that is both sovereign and digitally sovereign. It has covered the (un)definition of Artificial Intelligence, the historical evolution of the concept of sovereignty, proposing for the latter an interpretative leap.

It should be noted the EU's regulatory approach to AI has come to represent the bigger challenge of the transformations imposed on societies due to digitalization and globalization. In Europe, more specifically, it means to ordain and secure the digital element around core foundational principles of human rights, freedom, infrastructure and fair economic competition (POHLE *et al.*, 2020, p. 13).

With a geopolitical competition underway, the EU has employed different regulatory options in its "toolbox", but for some authors it is still behind in the race (CHRISTAKIS, 2020, HOBBS, 2020). From this point of view, the discussion held in this work is important. Not so much as to prescribe a definitive route for the EU to follow and to gain its desired autonomy, but rather to bring to light the many questions surrounding AI, regulation and the sovereignty dilemma over the digital sphere.

Europe has a world-leading ethical and human-centric approach to AI, but regulatory quality is not an end in itself. The biggest challenge for Europe to gain leadership in AI and influence its global standards is to achieve a decisive market share in the global AI market while currently being the "last of the pack".

The EU will need to coordinate the economic pillars of AI, through investments, competitiveness and talent retention. The economic and social

potentials of AI can only be fully realized if the EU massively invests in the core pillars of AI: data, algorithms and hardware for a sustained period, via public and private funding options, including digital infrastructure (STRAUS, 2020).

Although this work solidifies a theoretical and practical road ahead for the EU to claim leadership in AI, currently the scenario does not give evidence on when it could be achieved, especially since the EU needs urgently to catch up with the US and China on technological and economic aspects.

Five years after the Jucker speech referenced in Chapter 3 of this essay, we argue that the time of European sovereignty indeed has come, and with great importance. With the rapid progress of AI applications and also the acceleration of the geopolitical competition with China and the USA, the EU will continue to face challenges to its sovereign claim over AI.

To that end, it is rather illustrative the speech given by Margrethe Vestager, quoted at the beginning of this essay, showcasing China as the holder of all data (akin to Orwell's Big Brother), the US with "all the money" (reflecting the full force of its liberal economy) and the EU with principles.

Which is a simple yet deep reflection that EU leaders consider European values as a triumph to lead and spread across the world, Effectively, the EU is keen to cooperate when it is possible and to compete when it is necessary to expand its influence on global standards to AI far beyond the Single Market.

7. BIBLIOGRAPHY

ABDULOV, R. (2020). Artificial intelligence as an important factor of sustainable and crisis-free economic growth. Procedia Computer Science, 169, 468-472.

AGAMBEN, Giorgio. 2003. Lo stato di eccezione. Turin: Bollati-Boringhieri; English translation: Attell K (2005) State of Exception. Chicago: University of Chicago Press.

ANDERSEN, S. L. (2002). John McCarthy: Father of AI. IEEE Intelligent Systems. doi:10.1109/MIS.2002.1039837.

ARENAL, A., Armuna, C., Feijoo, C., Ramos, S., Xu, Z., & Moreno, A. (2020). Innovation ecosystems theory revisited: The case of artificial intelligence in China. Telecommunications Policy, 44(6), 101960.

ARON, Raymond. Peace and War. New York: Frederick A. 1967.

AZPÍROZ, María Luisa. Soft power and public diplomacy: the case of the European Union in Brazil. Los Angeles: Figueroa Press, 2015.

BARKANE, I. (2022). Questioning the EU proposal for an Artificial Intelligence Act: The need for prohibitions and a stricter approach to biometric surveillance 1. Information Polity, 27(2), 147-162.

BARRINHA, André; CHRISTOU, G. Speaking sovereignty: the EU in the Cyber Domain. European Security, v. 31, n. 3, p. 356-376, 2022.

BARTELSON, Jens. A genealogy of sovereignty. Cambridge University Press, 1995.

BBC, Google AI defeats human Go champion. 2017. Available at https://www.bbc.com/news/technology-40042581.

BELLAMY, Richard. A European republic of sovereign states: sovereignty, republicanism and the European Union. European Journal of Political Theory, v. 16, n. 2, p. 188-209, 2017.

BELLANOVA, Rocco; CARRAPICO, Helena; DUEZ, Denis. Digital/sovereignty and European security integration: an introduction. European security, v. 31, n. 3, p. 337-355, 2022.

BESSON, Samantha. Sovereignty. Max Planck Encyclopedia of Public International Law online, OUP (2011).

BIFULCO, Raffaele; NATO, Alessandro. The concept of sovereignty in the EU–past, present and the future. RECONNECT WORKING PAPER, 2020.

BORDELO, Brendan. Can Russia build its own 'Great Firewall'? *In* Politico. 2022. Available at https://www.politico.com/newsletters/morning-tech/2022/03/15/can-russia-build-its-own-great-firewall-00017244.

BORRELL, Joseph. Why European strategic autonomy matters. 2020. Available at: https://www.eeas.europa.eu/eeas/why-european-strategic-autonomy-matters_en.

BOSTROM, Nick. How long before superintelligence. International Journal of Futures Studies, v. 2, n. 2003, p. 12-17, 1998.

BRADFORD, Anu. The Brussels effect: How the European Union rules the world. Oxford University Press, 2020.

BRAJOVIC, D., Renner, N., Goebels, V. P., Wagner, P., Fresz, B., Biller, M. & Huber, M. F. (2023). Model Reporting for Certifiable AI: A Proposal from Merging EU Regulation into AI Development.

BRATTBERG, Erik; RUGOVA, Venesa; CSERNATONI, Raluca. Europe and AI: Leading, lagging behind, or carving its own way? Washington: Carnegie Endowment for International Peace, 2020.

BRETON, Thierry. Europe: The Keys to Sovereignty. 2020. Available at https://ec.europa.eu/commission/presscorner/detail/en/ac_20_2885.

BROEDERS, Dennis; CRISTIANO, Fabio; KAMINSKA, Monica. In Search of Digital Sovereignty and Strategic Autonomy: Normative Power Europe to the Test of Its Geopolitical Ambitions. JCMS: Journal of Common Market Studies, 2023.

BROWN, Chris; NARDIN, Terry; RENGGER, Nicholas (Ed.). International relations in political thought: texts from the ancient Greeks to the First World War. Cambridge University Press, 2002.

BUGHIN, Jaques *et al.*. Artificial intelligence: the next digital frontier? Mckinsey Global Institute. 2017.

BUITEN, M. C. (2019). Towards intelligent regulation of artificial intelligence. European Journal of Risk Regulation, 10(1), 41-59.

CALDERARO, Andrea; BLUMFELDE, Stella. Artificial intelligence and EU security: the false promise of digital sovereignty. European Security, v. 31, n. 3, p. 415-434, 2022.

CALHEIROS, B. (2021). Carl Schmitt and international relations-actuality and theoretical position. JANUS. NET e-journal of International Relations, 12, 170-184.

CARRIÇO, Gonçalo. The EU and artificial intelligence: A human-centred perspective. European View, v. 17, n. 1, p. 29-36, 2018.

CASTRO, Daniel; MCLAUGHLIN, Michael; CHIVOT, Eline. Who is winning the AI race: China, the EU or the United States. Center for Data Innovation, v. 19, 2019.

CATH, Corinne *et al*. Artificial intelligence and the 'good society': the US, EU, and UK approach. Science and engineering ethics, v. 24, p. 505-528, 2018.

CHENG, J., & ZENG, J. (2023). Shaping AI's future? China in global AI governance. Journal of Contemporary China, 32(143), 794-810.

CHINA STATE COUNCIL, State Council Notice on the Issuance of the Next Generation Artificial Intelligence Development Plan. Translated by Graham Webster *et al.*, 2017, available on: https://digichina.stanford.edu/work/full-translation-chinas-new-generation-artificial-intelligence-development-plan-2017/.

CHIVOT, Eline; CASTRO, Daniel. The EU Needs to Reform the GDPR To Remain Competitive in the Algorithmic Economy. Center for Data Innovation. 2019. Available on https://datainnovation.org/2019/05/the-eu-needs-to-reform-the-gdpr-to-remain-competitive-in-the-algorithmic-economy/.

CHRISTAKIS, Theodore. 'European Digital Sovereignty': Successfully Navigating Between the 'Brussels Effect'and Europe's Quest for Strategic Autonomy. SSRN 3748098, 2020.

CIRCIUMARU, A. (2021). The EU's digital sovereignty-the role of artificial intelligence and competition policy. Available at SSRN 3831815.

COHEN, I. G., Evgeniou, T., Gerke, S., & Minssen, T. (2020). The European artificial intelligence strategy: implications and challenges for digital health. The Lancet Digital Health, 2(7), e376-e379.

COMMUNICATION FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT. 2018. “The European Council, the European Economic and Social Committee and the European Committee of the Regions, “Artificial intelligence for Europe.” COM/2018/237 final.

COUNCIL OF THE EUROPEAN UNION. Council conclusions on implementing the EU global strategy in the area of security and defence. 2016. Available at https://www.consilium.europa.eu/media/22459/eugs-conclusions-st14149en16.pdf.

COUNCIL OF THE EUROPEAN UNION. (2022), 7371/2022. A Strategic Compass for Security and Defence. For a European Union that protects its citizens, values and interests and contributes to international peace and security.

CRAFTS, Nicholas. Artificial intelligence as a general-purpose technology: an historical perspective. Oxford Review of Economic Policy, v. 37, n. 3, 2021.

CSERNATONI, Raluca. The EU’s hegemonic imaginaries: from European strategic autonomy in defence to technological sovereignty. European security, v. 31, n. 3, p. 395-414, 2022.

DALY, A., Hagendorff, T., Hui, L., Mann, M., Marda, V., Wagner, B.,... & Witteborn, S. (2019). Artificial intelligence governance and ethics: global perspectives. arXiv preprint arXiv:1907.03848.

DANAHER, J. Is regulation of artificial intelligence possible? [Online], <http://hplusmagazine.com/2015/07/15/is-regulation-of-artificial-intelligence possible/>; 2015.

DIXON, R. B. L. (2023). A principled governance for emerging AI regimes: lessons from China, the European Union, and the United States. AI and Ethics, 3(3), 793-810.

EBERS, M. (2021). Standardizing AI-The Case of the European Commission's Proposal for an Artificial Intelligence Act. The Cambridge handbook of artificial intelligence: global perspectives on law and ethics.

EBERS, M., Hoch, V. R., Rosenkranz, F., Ruschemeier, H., & Steinrötter, B. (2021). The european commission's proposal for an artificial intelligence act—a critical assessment by members of the robotics and ai law society (rails). J, 4(4), 589-603.

ESTELLA, A. (2023). Trust in Artificial Intelligence: Analysis of the European Commission Proposal for a Regulation of Artificial Intelligence. Ind. J. Global Legal Stud., 30, 39.

EUROPEAN COMMISSION. Artificial Intelligence for Europe. COM(2018) 237 final. 2018a. Available on https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=COM%3A2018%3A237%3AFIN.

EUROPEAN COMMISSION. Artificial intelligence: Commission outlines a European approach to boost investment and set ethical guidelines. Press Release. 2018b. Available on https://ec.europa.eu/commission/presscorner/detail/en/IP_18_3362.

EUROPEAN COMMISSION. Independent High-Level Expert Group on Artificial Intelligence. Policy and Investment Recommendations for Trustworthy AI. 2019a. Available on https://digital-strategy.ec.europa.eu/en/library/policy-and-investment-recommendations-trustworthy-artificial-intelligence.

EUROPEAN COMMISSION. Independent High-Level Expert Group on Artificial Intelligence. Ethics Guidelines for Trustworthy AI. 2019b. Available on https://ec.europa.eu/newsroom/dae/document.cfm?doc_id=60419.

EUROPEAN COMMISSION. Communication: Building Trust in Human Centric Artificial Intelligence. 2019c. Available on https://ec.europa.eu/newsroom/dae/document.cfm?doc_id=58496.

EUROPEAN COMMISSION. The EU's cybersecurity strategy for the digital decade. 2020a. Available at https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52020JC0018.

EUROPEAN COMMISSION. (2020b). On Artificial Intelligence—A European Approach to Excellence and Trust.

EUROPEAN COMMISSION. White paper on artificial intelligence - A European approach to excellence and trust, COM(2020)65 final. 2020c. Available on https://commission.europa.eu/document/download/d2ec4039-c5be-423a-81ef-b9e44e79825b_en?filename=commission-white-paper-artificial-intelligence-feb2020_en.pdf.

EUROPEAN COMMISSION. EU-US Trade and Technology Council Inaugural Joint Statement. 2021. Available on https://ec.europa.eu/commission/presscorner/detail/en/statement_21_4951.

EUROPEAN COMMISSION. (2022). The European Defence Fund (EDF). Available at https://ec.europa.eu/defence-industry-space/eu-defence-industry/european-defence-fund-edf_pt.

EUROPEAN COMMISSION. European approach to artificial intelligence. 2024a. Available on https://digital-strategy.ec.europa.eu/en/policies/european-approach-artificial-intelligence.

EUROPEAN COMMISSION. Coordinated Plan on Artificial Intelligence. 2024b. Available on https://digital-strategy.ec.europa.eu/en/policies/plan-ai.

EUROPEAN COUNCIL, European Council meeting - Conclusions. 2017. Available on https://www.consilium.europa.eu/media/21620/19-euco-final-conclusions-en.pdf.

EUROPEAN COUNCIL, Conclusions 1 and 2 October 2020. EUCO 13/20.

EUROPEAN PARLIAMENT, Hearing of Margrethe Vestager Executive Vice-President-Designate Of The European Commission (Europe fit for the Digital Age). 2019a. Available at https://www.europarl.europa.eu/resources/library/media/20191009RES63801/20191009RES63801.pdf.

EUROPEAN PARLIAMENT. Security threats connected with the rising Chinese technological presence in the EU and possible action on the EU level to reduce them (2019/2575(RSP)). 2019b. Available on https://www.europarl.europa.eu/doceo/document/TA-8-2019-0156_EN.html.

EUROPEAN PARLIAMENT, EU AI Act: first regulation on artificial intelligence. 2023. Available at https://www.europarl.europa.eu/news/en/headlines/society/20230601STO93804/eu-ai-act-first-regulation-on-artificial-intelligence.

EUROPEAN UNION. Consolidated Versions of the Treaty on European Union and the Treaty on the Functioning of the European Union: Charter of Fundamental Rights of the European Union. Publications Office of the European Union, 2012.

ENISA. Principles and opportunities for a renewed EU cyber security strategy. ENISA's contribution to the Strategy review. 2017. Available on

https://www.enisa.europa.eu/publications/enisa-position-papers-and-opinions/enisa-input-to-the-css-review-b.

EXECUTIVE OFFICE OF THE PRESIDENT. Preparing for the future of artificial intelligence. 2016. Available on https://obamawhitehouse.archives.gov/sites/default/files/whitehouse_files/microsites/ostp/NSTC/preparing_for_the_future_of_ai.pdf

EXECUTIVE ORDER 13859. 2019. 84 FR 3967. Available on https://www.federalregister.gov/documents/2019/02/14/2019-02544/maintaining-american-leadership-in-artificial-intelligence

EXECUTIVE ORDER 13860. 2020. 85 FR 78939. Available on https://www.federalregister.gov/documents/2020/12/08/2020-27065/promoting-the-use-of-trustworthy-artificial-intelligence-in-the-federal-government.

EZRACHI, A., & Stucke, M. E. (2017). Artificial intelligence & collusion: When computers inhibit competition. U. Ill. L. Rev., 1775.

FALK, Richard. Sovereignty *in* KRIEGER, Joel; CRAHAN, Margaret E. (Ed.). The Oxford companion to politics of the world. Oxford; New York: Oxford University Press, 2001.

FIOTT, Daniel, & LINDSTROM, Gustav (2018). Artificial Intelligence–What Implications for EU Security and Defence? European Union Institute for Security Studies (EUISS).

FISCHER, Bogdan; PISKORZ-RYŃ, Agnieszka. Artificial intelligence in the context of data governance. International Review of Law, Computers & Technology, v. 35, n. 3, p. 419-428, 2021.

FRANKE, Ulrike Ester (2021). Artificial divide: How Europe and America could clash over AI.

FORSBERG, Tuomas. Normative power Europe, once again: A conceptual analysis of an ideal type. JCMS: Journal of Common Market Studies, v. 49, n. 6, p. 1183-1204, 2011.

FOWLER, Michael Ross; BUNCK, Julie Marie. Law, power, and the sovereign state: the evolution and application of the concept of sovereignty. Penn State Press, 2010.

GAILHOFER, P. et al., The role of Artificial Intelligence in the European Green Deal, Study for the special committee on Artificial Intelligence in a Digital Age (AIDA), Policy Department for Economic, Scientific and Quality of Life Policies, European Parliament, Luxembourg, 2021.

GAMMELTOFT-HANSEN, Thomas; ADLER-NISSEN, Rebecca. An introduction to sovereignty games. In: Sovereignty games: Instrumentalizing state sovereignty in Europe and beyond. New York: Palgrave Macmillan US, 2008. p. 1-17.

GATES, Bill. The Age of AI has begun: Artificial intelligence is as revolutionary as mobile phones and the Internet. 2023. Available at https://www.gatesnotes.com/The-Age-of-AI-Has-Begun.

GURKAYNAK, Gonenc; YILMAZ, Ilay; HAKSEVER, Gunes. Stifling artificial intelligence: Human perils. Computer Law & Security Review, v. 32, n. 5, p. 749-758, 2016.

HACKER, P. (2023). The European AI liability directives–Critique of a half-hearted approach and lessons for the future. Computer Law & Security Review, 51, 105871.

HAECK, Pieter. With Apple's iPhone 15, the EU wins the charger war

HARARI, Y. N. Who Will Win the Race for AI? China and the United States are leading the pack—and the laggards face grave dangers. Foreign Policy, v. 22, 2019.

HEDLUND, M. (2022). Distribution of forward-looking responsibility in the EU process on AI regulation. Frontiers in Human Dynamics, 4, 703510.

HENLEY, Jon. Angela Merkel: EU cannot completely rely on US and Britain any more. 2017. The Guardian newspaper. Available at https://www.theguardian.com/world/2017/may/28/merkel-says-eu-cannot-completely-rely-on-us-and-britain-any-more-g7-talks.

HIGH-LEVEL EXPERT GROUP ON ARTIFICIAL INTELLIGENCE (HLEG). Policy and Investment Recommendations for Trustworthy AI. 2019. Available on https://digital-strategy.ec.europa.eu/en/library/policy-and-investment-recommendations-trustworthy-artificial-intelligence.

HILDEBRANDT, Mireille. Global competition and convergence of AI Law. 2022. Available on <osf.io/j36ke/download>.

HINE, Emmie; FLORIDI, Luciano. Artificial intelligence with American values and Chinese characteristics: a comparative analysis of American and Chinese governmental AI policies. AI & SOCIETY, v. 39, n. 1, p. 257-278, 2024.

HOBBS, Carla. Project note: In search of Europe's digital sovereignty. 2020. *In* "Europe's Digital Sovereignty: From Rulemaker to Superpower in the Age of US-China Rivalry", European Council on Foreign Relations, available at https://ecfr.eu/publication/europe_digital_sovereignty_rulemaker_superpower_age_us_china_rivalry/.

HOCH, P. A., & Engelmann, W. (2023). Regulação da Inteligência Artifical no Judiciário Brasileiro e Europeu. Pensar-Revista de Ciências Jurídicas.

HOOKER, W. (2009) Carl Schmitt's International Thought: Order and Orientation. Cam-bridge: Cambridge University Press.

HOROWITZ, M. C., Allen, G. C., Kania, E. B., & Scharre, P. (2018). Strategic competition in an era of artificial intelligence. Center for a New American Security.

HYDE-PRICE, Adrian. 'Normative' power Europe: a realist critique. Journal of European public policy, v. 13, n. 2, p. 217-234, 2006.

JANIESCH, Christian; ZSCHECH, Patrick; HEINRICH, Kai. Machine learning and deep learning. Electronic Markets, v. 31, n. 3, p. 685-695, 2021.

JIANG, Min. Authoritarian informationalism: China's approach to Internet sovereignty. SAIS Rev. Int'l Aff., v. 30, p. 71, 2010.

JORDAN, M. I. (2019). Artificial intelligence—the revolution hasn't happened yet. Harvard Data Science Review, 1(1), 1-9.

JORNAL ECONOMICO. (2021). António Guterres lamenta falta de solidariedade mundial para combater vírus. Available at https://jornaleconomico.pt/noticias/antonio-guterres-lamenta-falta-de-solidariedade-mundial-para-combater-virus-758323.

JUSTO-HANANI, R. (2022). The politics of Artificial Intelligence regulation and governance reform in the European Union. Policy Sciences, 55(1), 137-159.

KAMINSKI, M. E., & Urban, J. M. (2021). The right to contest AI. Columbia Law Review, 121(7), 1957-2048.

KANIA, E. B. (2021). Artificial intelligence in China's revolution in military affairs. Journal of strategic studies, 44(4), 515-542.

KELLER, Clara Iglesias. Exception and Harmonization: Three Theoretical Debates on Internet Regulation. 2019.

KRASNER, Stephen D. Compromising westphalia. International security, v. 20, n. 3, p. 115-151, 1995.

LAMONT, Christopher (2015) - Research Methods in International Relations. London: SAGE Publications Ltd.

LARSSON, S., & Heintz, F. (2020). Transparency in artificial intelligence. Internet Policy Review, 9(2).

LEE, K. F. (2019). Inteligência artificial. Globo Livros.

LEYEN, Ursula von der. A Union that strives for more. Political Guidelines for the next European Commission 2019 – 2024. 2019. Available at https://ec.europa.eu/commission/sites/beta-political/files/political-guidelines-next-commission_en.pdf

LEYEN, Ursula von der. Shaping Europe's digital future: op-ed by Ursula von der Leyen, President of the European Commission. 2020. Available at https://ec.europa.eu/commission/presscorner/detail/en/ac_20_260.

LIAROPOULOS, Andrew. EU Digital Sovereignty: A Regulatory Power Searching for its Strategic Autonomy in the Digital Domain. In: ECCWS 2021 20th European Conference on Cyber Warfare and Security. Academic Conferences Inter Ltd, 2021. p. 246.

KIM, Kwang Gi. Book review: Deep learning. Healthcare informatics research, v. 22, n. 4, p. 351-354, 2016.

KURYLO, B. (2016). Russia and Carl Schmitt: the hybridity of resistance in the globalised world. Palgrave Communications, 2(1), 1-9.

MATTHEWS, G., Hancock, P. A., Lin, J., Panganiban, A. R., Reinerman-Jones, L. E., Szalma, J. L., & Wohleber, R. W. (2021). Evolution and revolution: Personality research for the coming world of robots, artificial intelligence, and autonomous systems. Personality and individual differences, 169, 109969.

MANNERS, Ian. Normative power Europe: a contradiction in terms? JCMS: Journal of common market studies, v. 40, n. 2, p. 235-258, 2002.

MCCARTHY, John. What is artificial intelligence? 2004, revised on November 12, 2007. Available at https://philpapers.org/rec/MCCWIA.

MCLOUGHLIN, D. (2009) Crisis, modernity, authority: Carl Schmitt on order and the state. The Australian Feminist Law Journal; 31 (1): 135–52.

MICHEL, Charles. 'Strategic autonomy for Europe - the aim of our generation' - speech by President Charles Michel to the Bruegel think tank. 2020. Available at https://www.consilium.europa.eu/en/press/press-releases/2020/09/28/l-autonomie-strategique-europeenne-est-l-objectif-de-notre-generation-discours-du-president-charles-michel-au-groupe-de-reflexion-bruegel/.

MINSSEN, T., Gerke, S., Aboy, M., Price, N., & Cohen, G. (2020). Regulatory responses to medical machine learning. Journal of Law and the Biosciences, 7(1), lsaa002.

MORENO, G. P. (2021). A União Europeia dá seus primeiros passos na regulamentação da relação entre inteligência artificial e propriedade intelectual. Revista Rede de Direito Digital, Intelectual & Sociedade, 1(1), 45-68.

MORGENTHAU, Hans Joachim. Politics Among Nations: The Struggle for Power and Peace. 1948. New York: Alfred Knopf. Edition of 1973.

MOUFFE, Chantal. The democratic paradox. verso, 2000.

MUEHLEMATTER, U. J., Daniore, P., & Vokinger, K. N. (2021). Approval of artificial intelligence and machine learning-based medical devices in the USA and Europe (2015–20): a comparative analysis. The Lancet Digital Health, 3(3), e195-e203.

MUELLER, Milton L. Against sovereignty in cyberspace. International studies review, v. 22, n. 4, p. 779-801, 2020.

NAGAN, Winston P.; HAMMER, Craig. The changing character of sovereignty in international law and international relations. Colum. J. Transnat'l L., v. 43, p. 141, 2004.

NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY (NIST). Artificial Intelligence – AI Policy Contributions. 2024. Available on https://www.nist.gov/artificial-intelligence/ai-policy-contributions.

OPPY, Graham; DOWE, David, "The Turing Test", The Stanford Encyclopedia of Philosophy (Winter 2021 Edition), Edward N. Zalta (ed.).

ORSI, R. (2017). Carl Schmitt and International Political Theory: Revisiting a Complex Encounter. 26. Pari Working Papers.

PALMSTORFER, R. (2023). Opportunity or Risk? Europe's Legal Response to the Challenges of Artificial Intelligence: An Analysis of the European Commission's Proposal for an AI Act. ZOR, 78, 269.

PEREIRA, U. V., & Teixeira, T. M. (2019). Inteligência artificial: a quem atribuir responsabilidade?. Revista de Direitos e Garantias Fundamentais, 20(2), 119-142.

PESAPANE, F., Volonté, C., Codari, M., & Sardanelli, F. (2018). Artificial intelligence as a medical device in radiology: ethical and regulatory issues in Europe and the United States. Insights into imaging, 9, 745-753.

PETERSON, John. The European Union: pooled sovereignty, divided accountability. Political Studies, v. 45, n. 3, p. 559-578, 1997.

PHILPOTT, Daniel. Sovereignty. *In* The Stanford Encyclopedia of Philosophy (Fall 2020 Edition), Edward N. Zalta (ed.), available at: https://plato.stanford.edu/archives/fall2020/entries/sovereignty/.

PINKER, Steven. (2007). The language instinct: How the mind creates language. New York: Harper Perennial Modern Classics.

POHLE, Julia; THIEL, Thorsten. Digital sovereignty. Pohle, J. & Thiel, 2020.

POPKOVA, E. G., & Gulzat, K. (2020). Technological revolution in the 21 st century: digital society vs. artificial intelligence. In The 21st century from the positions of modern science: Intellectual, digital and innovative aspects (pp. 339-345). Springer International Publishing.

RADAELLI, Claudio M. The puzzle of regulatory competition. Journal of Public Policy, v. 24, n. 1, p. 1-23, 2004.

RADU, R. (2021). Steering the governance of artificial intelligence: national strategies in perspective. Policy and society, 40(2), 178-193.

RENDA, A. (2019). Artificial Intelligence. Ethics, governance and policy challenges. CEPS Centre for European Policy Studies.

RENDA, A., Arroyo, J., Fanni, R., Laurer, M., Sipiczki, A., Yeung, T. & de Pierrefeu, G. (2021). Study to support an impact assessment of regulatory requirements for artificial intelligence in Europe. European Commission: Brussels, Belgium.

REYES, K. G., & Maruyama, B. (2019). The machine learning revolution in materials?. MRS Bulletin, 44(7), 530-537.

ROBERTS, Huw *et al*. Achieving a 'Good AI Society': Comparing the Aims and Progress of the EU and the US. Science and engineering ethics, v. 27, p. 1-25, 2021.

ROBERTS, H., Cowls, J., Hine, E., Morley, J., Wang, V., Taddeo, M., & Floridi, L. (2023). Governing artificial intelligence in China and the European Union: Comparing aims and promoting ethical outcomes. The Information Society, 39(2), 79-97.

ROBERTS, H., Cowls, J., Morley, J., Taddeo, M., Wang, V., & Floridi, L. (2021B). The Chinese approach to artificial intelligence: an analysis of policy, ethics, and regulation. AI & society, 36, 59-77.

ROUSSEAU, Jean-Jacques. The Social Contract or Principles of Political Right. 1762. Translated by G.D.H. Cole, available at https://discoversocialsciences.com/wp-content/uploads/2018/07/Rousseau-Social-Contract.pdf.

RUSSELL, Stuart J; NORVIG, Peter. Artificial intelligence a modern approach. Pearson Education, Inc., 2010.

SAMOILI, Sofia *et al*. TES analysis of AI Worldwide Ecosystem in 2009-2018. Joint Research Centre (Seville site), 2020.

SCOTT, Mark. Europe's tech ambition: To be the world's digital policeman. 2017. Available at https://www.politico.eu/article/europe-tech-ambition-to-be-world-digital-policeman/.

SCOTT, Mark; CERULUS, Laurens. Europe's new data protection rules export privacy standards worldwide. Politico. 2018. Available on https://www.politico.eu/article/europe-data-protection-privacy-standards-gdpr-general-protection-data-regulation/.

SCHERER, Matthew U. Regulating artificial intelligence systems: Risks, challenges, competencies, and strategies. Harv. JL & Tech., v. 29, p. 353, 2015.

SCHNEIDER, I. (2020). Democratic governance of digital platforms and artificial intelligence?: Exploring governance models of China, the US, the EU and Mexico. JeDEM-eJournal of eDemocracy and Open Government, 12(1), 1-24.

SHAPIRO, Jeremy. Introduction: Europe's digital sovereignty. 2020. *In* "Europe's Digital Sovereignty: From Rulemaker to Superpower in the Age of US-China Rivalry", European Council on Foreign Relations, available at https://ecfr.eu/publication/europe_digital_sovereignty_rulemaker_superpower_age_us_china_rivalry/.

SHINDE, Pramila P.; SHAH, Seema. A review of machine learning and deep learning applications. In: 2018 Fourth international conference on computing communication control and automation (ICCUBEA). IEEE, 2018. p. 1-6.

SIGANOS, Dimitrios; STERGIOU, Christos. Neural networks. Google Search, 1996.

SMUHA, Nathalie A. From a ‘race to AI’to a ‘race to AI regulation’: regulatory competition for artificial intelligence. Law, Innovation and Technology, v. 13, n. 1, p. 57-84, 2021.

SMUHA, N. A. (2019). The EU approach to ethics guidelines for trustworthy artificial intelligence. Computer Law Review International, 20(4), 97-106.

SMUHA, N. A., Ahmed-Rengers, E., Harkens, A., Li, W., MacLaren, J., Piselli, R., & Yeung, K. (2021). How the EU can achieve legally trustworthy AI: a response to the European Commission’s proposal for an artificial intelligence act. Available at SSRN 3899991.

STATE COUNCIL (2017) Full Translation: China’s ‘New Generation Artificial Intelligence Development Plan’ (2017). G. Webster, R. Creemers, P. Triolo, & E. Kania, Trans. DigiChina. Standford University. Available on https://digichina.stanford.edu/work/full-translation-chinas-new-generation-artificial-intelligence-development-plan-2017/.

STIGLITZ, Joseph. The EU's global role. 2007. Available at https://www.theguardian.com/commentisfree/2007/mar/29/theeusglobalmission.

STIX, Charlotte. The ghost of AI governance past, present and future: AI governance in the European Union. arXiv preprint arXiv:2107.14099, 2021.

STRAUS, Joseph. Artificial intelligence–challenges and chances for Europe. European Review, v. 29, n. 1, p. 142-158, 2021.

TADDEO, M., & Floridi, L. (2021). Regulate Artificial Intelligence to Avert Cyber Arms Race. In Ethics, Governance, and Policies in Artificial Intelligence (pp. 283-287). Cham: Springer International Publishing.

TEIXEIRA, J. (2019). O que é inteligência artificial. E-galáxia.

TIMMERS, Paul. Strategic Autonomy and Cybersecurity. 2019. Available at: https://eucd.s3.eu-central-1.amazonaws.com/eucd/assets/RFt_Rvhh/paul-timmers-strategic-autonomy-may-2019-eucyberdirect.pdf.

TIMMERS, Paul. When Sovereignty Leads and Cyber Law Follows. 2020. Available at https://directionsblog.eu/when-sovereignty-leads-and-cyber-law-follows/.

THUMFART, Johannes. The COVID-Crisis as Catalyst for the Norm Development of Digital Sovereignty. Building Barriers or Improving Digital Policies? Building Barriers or Improving Digital Policies, 2021.

ULNICANE, I. (2022). Artificial Intelligence in the European Union: Policy, ethics and regulation. In The Routledge handbook of European integrations. Taylor & Francis.

VARDI, Moshe Y., Artificial Intelligence: Past and Future, COMM. ACM, Jan. 2012, at 5, 5 (2012).

VEALE, M., & Zuiderveen Borgesius, F. (2021). Demystifying the Draft EU Artificial Intelligence Act—Analysing the good, the bad, and the unclear elements of the proposed approach. Computer Law Review International, 22(4), 97-112.

WALKER, N. (2003), Late Sovereignty in the European Union. In: N. Walker (ed.), Sovereignty in Transition (pp. 3-32). Oxford: Hart

WALSH, T. (2017). The ai revolution. NSW Department of Education Education: Future Frontiers.

WEED, Julie, Air Travelers Can't See All of It, but More Tech Is Moving Them Along, 2020, The New York Times, available at <https://www.nytimes.com/2020/02/25/business/artificial-intelligence-airports.html>.

WERNER, Wouter G.; DE WILDE, Jaap H. The endurance of sovereignty. European journal of international relations, v. 7, n. 3, p. 283-313, 2001.

WHITE HOUSE, Executive Order on Maintaining American Leadership in Artificial Intelligence. 2019. Available on https://trumpwhitehouse.archives.gov/presidential-actions/executive-order-maintaining-american-leadership-artificial-intelligence/.

WHITE HOUSE, Blueprint for an AI Bill of Rights. 2022. Available on https://www.whitehouse.gov/ostp/ai-bill-of-rights/.

WHITE HOUSE, Executive Order on the Safe, Secure, and Trustworthy Development and Use of Artificial Intelligence. 2023. Available on https://www.whitehouse.gov/briefing-room/presidential-actions/2023/10/30/executive-order-on-the-safe-secure-and-trustworthy-development-and-use-of-artificial-intelligence/.

WOLFF, Lutz-Christian. Artificial Intelligence ante portas: The End of Comparative Law?. The Chinese Journal of Comparative Law, v. 7, n. 3, p. 484-504, 2019.

WORLD ECONOMIC FORUM – WEF (2022). The Fourth Industrial Revolution, by Klaus Schwab. Available at https://www.weforum.org/about/the-fourth-industrial-revolution-by-klaus-schwab.

YARA, O., Brazheyev, A., Golovko, L., & Bashkatova, V. (2021). Legal regulation of the use of artificial intelligence: Problems and development prospects. European Journal of Sustainable Development, 10(1), 281-281.

YUDKOWSKY, Eliezer et al. Reducing long-term catastrophic risks from artificial intelligence. The Singularity Institute, San Francisco, 2010.

ZABLAH, Nelson Rauda. El Salvador’s Bitcoin Paradise Is a Mirage. 2023. Available at https://www.nytimes.com/2022/07/02/opinion/bitcoin-el-salvador-bukele-crypto.html.

ZENG, J. (2020). Artificial intelligence and China's authoritarian governance. International Affairs, 96(6), 1441-1459.