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UNDERSTANDING THE CHALLENGES OF AI IN THE EU LEGAL FRAMEWORK: THREE VOLUMES EDITED BY A. PAJNO, F. DONATI AND A. PERRUCCI

The world in which we live is increasingly characterised by the omnipresence of connections. The affirmation of the said growing interconnectedness has led to the development of new technologies, such as machine learning, deep learning and neural networks, to menage large amounts of data.

The transformation triggered on society by the technological challenge is not halted to mere change, but it is rather shaped like an intriguing transition, which carries within itself infinite potentials.

With respect to the legal environment specifically, the direct effect of technology has been to question the existing legal categories, to examine their ability to manage such new phenomenon since the 1990s, alongside the need to devise normative changes, or even opening to new forms of regulation. Another focal point of the discussion about the impact of artificial intelligence is the investigation of the role that human being plays within the algorithmic decision-making process.

Guido Alpa observes that «we cannot calculate, today, where algorithms will lead us», but law has clearly assumed the role of «malleable science, more flexible and enveloping than it was in the past».

In the first of the three volumes that compose the impressive work edited by

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Alessandro Pajno, Filippo Donati and Antonio Perrucci, each author attempts to portray how the interaction between artificial intelligence and law affects relevant issues, such as the respect of fundamental rights, the protection of personal data, and regulation.

The epochal transition from the «internet of things» to the «internet of everything» is accurately described by Alessandro Pajno in the preface as the revolution that leads from the constant and habitual presence of the internet to the hyper-connectivity between people, processes, and data. This trend has involved a conflict, or at least potentially could be, between machine autonomy and human intervention, between technocentrism and anthropocentrism, with the inevitable emergence of ethical and legal problems. Is this the thread running through the entire work.

In the introduction, edited by Filippo Donati, he describes the three volumes of which the work is composed. The first volume, as will be discussed in more detail, focuses on the definition of artificial intelligence, its impact on fundamental rights and the regulation of large platforms. In the second, the authors discuss the public and private dimensions of the use of new technologies. In the third, the relationship between artificial intelligence, economics and finance is outlined.

The first volume is in turn divided into four parts, devoted respectively to the definition of artificial intelligence, the relationship between the latter and fundamental rights, and personal data and its regulation in relation to digital services and markets.

In the first part, consisting of a single chapter, Giuseppe F. Italiano, Stefano Civitarese Matteucci and Antonio Perrucci take note of the difficulty encountered in trying to answer the question of what exactly artificial intelligence is, a difficulty accentuated by the need to delimit exactly what can be considered «intelligent». The authors exclude the possibility that a system provided with AI can also be considered as having an artificial mind and consciousness. On the contrary, information on the functioning of an artificial intelligence can be found through the study of machine learning algorithms, which can improve automatically through experience and the use of data: in other words, capable of learning. The two problems that arise from this concern the use of algorithms by private and public actors.

In the second part, divided into six chapters, the authors discuss the relationship between fundamental rights and artificial intelligence. The second chapter is edited by

Antonio D'Aloia and concerns the connection between law and AI and, in this context, the role of the human being. In the third chapter, on fundamental rights and algorithms, Filippo Donati addresses the European regulation of artificial intelligence, between strengths and weaknesses. Adelina Adinolfi, Cristina Schepisi and Alberto Oddenino also discuss the supranational level and the relationship with fundamental rights from different points of view in the following chapters. In the seventh and last chapter of part two, Benedetta Cappiello reconstructs the potential integration of AI, blockchain and the right to health (and other rights).

The third part of the work, dedicated to artificial intelligence and personal data, is divided into nine chapters. The eighth chapter, edited by Marco Bassini and Oreste Pollicino, acts as a forerunner for the following chapters and allows the reader to get to grips with the concepts and categories of data protection tensions in the context of AI systems. Giovanni Maria Riccio and Giorgio Giannone, in chapter nine, explore the relevance of the legal bases for processing personal data by using AI systems. In chapter ten, by Giusella Finocchiaro and Laura Greco, the authors focus on the role of the data controller and data supervisor in the processing of personal data managed by artificial intelligence. In chapter eleven, by Giuseppe D'Acquisto, Carmine Andrea Trovato and Ludovica De Benedetti, the authors make some reflections on the concept of machine decision-making autonomy within the regulatory framework. Still about automated decision-making processes, Erik Longo in chapter twelve delves into the issue of the right to explanation. In chapter thirteen, Edoardo Carlo Raffiotta and Massimiliano Baroni discuss artificial intelligence and the protection of identity, while in chapter fourteen, Miriam Allena and Scilla Vernile explore the relationship between AI, the processing of personal data, and public administration. In the last two chapters, the processing of personal data in relation to AI techniques is studied in relation to its impact on universities and workplaces, respectively, by Giulia Schneider first and Mara Parpaglioni later.

The fourth and last part of the first volume is devoted to the relationship between AI and artificial services and markets. Chapter seventeen, edited by Laura Ammannati and Fabiana Di Porto, analyses the contents of the Digital Services Act, the Digital Markets Act and the Artificial Intelligence Act. Ugo Ruffolo and Andrea Amidei, in chapter eighteen, focus on the possible ex ante regulation of AI. In chapter

nineteen, instead, Federico Marini Balestra discusses the regulation of the application phase of AI-related technologies and the same author, in the following chapter, addresses the degree of intensity of regulation itself. Laura Ammannati and Fulvio Costantino, in the twenty-first chapter, treat regulation models and regulators of digital markets. Fabiana di Porto and Annalisa Signorelli close the book with a chapter on new forms of AI regulation.

Overall, the volume has the merit of exploring in detail the relationship between artificial intelligence, fundamental rights, digital services and markets, and regulation. The presence of many authors enriches the content of the book from the point of view of the different expertise of each of them.

The second volume that composes the outstanding work edited by Alessandro Pajno, Filippo Donati and Antonio Perrucci revolves around the public and private dimension of Artificial Intelligence.

After a preface by Alessandro Pajno and an introduction by Filippo Donati, describing respectively the challenge represented by Artificial Intelligence and the plan of the work, the first section of the second volume is dedicated to the relationship between Artificial Intelligence and public administration.

The first chapter, edited by Edoardo Chiti, Barbara Marchetti and Nicoletta Rangone, studies the ways in which several public administrations, such as independent authorities, central administrations, and smart cities, are experimenting AI systems in their activities. The authors get to show the increasing willingness of administrations to exploit the opportunities offered by technology to maximize efficiency. At the same time, administrations should acquire internal technical expertise to identify the systems best suited to their needs, ensure transparency and accountability of algorithmic administrative activity, and, finally, ensure human supervision over AI systems.

In the second chapter, Giulia Avanzini focuses on the challenges of data governance within administrations, depicting the several issues arising from the use of algorithmic systems in administrative procedures. Guarantees for the citizen are considerably weakened by the impossibility to apply traditional institutes to algorithmic decision-making, but also from data sets' low quality, incompleteness and inadequacy. A solution may come from widespread accessibility, accountability and constant human

access to verify or complement algorithmic decisions.

The described anthropocentric approach is also called for by Marco Macchia and Antonella Mascolo in chapter three, in which the authors analyze the new Proposal for a Regulation on Artificial Intelligence for a legal, robust and ethical use of technology. In chapter four, Leonardo Parona summarizes risks and benefits of algorithmic decision-making employed for discretional decisions, proposing a set of essential tools that the administration should bear to face the digital revolution, such as technical expertise and parallel procedures. Given the efficiency increase provided by Artificial Intelligence in public administrations, in chapter five Simone Franca advocates for data protection by design solutions, which should hinge from the GDPR paradigm.

AI also proves to have a strong impact on smart cities and public transport. As demonstrated by Maria Bianca Armiento through the seventh chapter, the latter benefits from a development of relationship with users in terms of consistency, adaptability and equality. On the other hand, Fulvio Costantino in the sixth chapter hopes for a new robust local and supranational legislation to solve the main issues that arise within smart cities.

The volume's second section is dedicated to the liability for Artificial Intelligence systems. Through the eighth chapter, Ugo Ruffolo leads an extensive reasoning on the current legal system's adequacy to ensure protection against any harmful Artificial Intelligence application. The author concludes with the inexpediency for a new *lex robotica*, since liability issues can be solved by interpretating the current provisions, which converge towards a human-centric perspective.

Andrea Amidei's ninth chapter focuses on the European product liability discipline: the current legal frame is appliable to Artificial Intelligence, but manufacturers should fully prevent any form of machine-learning devices malfunction. Against consumers' «digital vulnerability», Enrico Maria Cotugno highlights the need for a specific regulation on AI products, taking as a valid starting point the ex-ante risk assessment and the disclosure norms envisioned in the Proposal for a Regulation on Artificial Intelligence. Paolo Del Vecchio and Valentina Bignoli through chapter eleven sustain the inexpediency for a new *lex robotica* to regulate the responsibility in administrative algorithmic decision-making, as public officials are necessarily to be considered accountable for algorithmic decisions under the current regime. The twelfth chapter by Oreste Pollicino and Giovanni De Gregorio underlines the relevance of the

«new European digital constitutionalism», while describing the AI Act's vertical risk approach in opposition to the GDPR's accountability regime. Valeria Falce's chapter thirteen describes databases' singularity and the proposal for «bridge» solutions to effectively regulate the phenomenon, while waiting for a complete and coherent European legislation. Lastly, Antongiulio Lombardi and Giulio Lombardi describe different hypotheses of AI's liability supervision by independent agencies, trying to avoid responsibility assessment's fragmentation.

The third conclusive section concerns the relationship between Artificial Intelligence and jurisdiction, analyzing predictive justice's benefits and risks. Alessandro Pajno opens chapter fifteen with a thorough analysis of the issues that arise when configuring a machine-driven justice, finding the adversarial principle as a valid solution to guarantee the algorithmic decision's objectivity and neutrality. The following chapter, edited by Filippo Donati, describes the problem of judicial data's anonymization, which represents an open issue for European regulation, considering the various national provisions on the topic. Ugo Ruffolo envisions the machine as an advocate general, in charge of proposing a non-autonomous solution that the human judge can follow or disregard. Mario Libertini, Maria Rosaria Maugeri and Enzo Vincenti, authors of chapters eighteen and nineteen, investigate the use of algorithmic decision-making in civil justice: the proposal of a final decision that must be validated by a human judge is once again the best solution for a maximation of the machine's efficiency while taking into account the necessary guarantees for the citizens.

In Serena Quattrocolo's opinion, the criminal justice system should benefit from the use of Artificial Intelligence, avoiding any form of dystopian closure. Among the main challenges, the demonstrative capacity and reliability of means of proof provided using digital systems and the use of software aimed at predicting specific criminal risks, regardless of the prohibitions of criminological investigations. Ernestina Sacchetto in chapter twenty-one describes the use of facial recognition software as evidence in criminal trials, which bears risks of unaccountability and discrimination without a solid legislative frame. Fabio Pinelli with chapter twenty-two investigates the use of computational models to define criminal liability or the penalty quantum. These applications can only be considered acceptable under a broad and flexible legislation, which imposes human supervision.

The two final contributions, chapters twenty-three by Flavia Risso and the twenty-four by Dario Simeoli, analyze the role of Artificial Intelligence in administrative justice. The only admissible prospect seems to be the administrative trial's «cobotization»: algorithms can only support and could never replace the judge.

The third and last volume of essays, curated by Alessandro Pajno, Filippo Donati and Antonio Perrucci, explores the need for a strong collaboration between law and Artificial Intelligence in order to regulate digital tools. After analysing the impact of artificial intelligence on fundamental rights and on both private and public sectors, the authors reflect on the potential existence of new rights within Intellectual Property, financial and corporate law.

To answer the question titling this very interesting collection, the book describes the radical changes that Artificial Intelligence is demanding within the legal system, looking at the initiatives that have started within these new fields of research. Like the previous volumes, the work is divided into three parts. The first nine chapters, composing the first section, focus on the study of Intellectual Property rights for Artificial Intelligence systems.

Chapter one by Gustavo Ghidini and Isabella Austoni is an overview of the doctrinal debates on whether «authorship» can be applied to inventions made through AI. It also covers the development of new applications of technologies. In the following chapters, Andrea Amidei and Mariateresa Maggiolino hypothesise an extension of certain forms of protection offered by Intellectual Property and support the recognition of *sui generis* rights to machine-generated data collections. The third chapter focuses on Mario Libertini's analysis on the possibility of patenting so-called computer-generated inventions. He emphasises the opinion that an evolutionary interpretation of patent law is absolutely required and reviews the existing thesis on the legal subjectivity of artificial agents. Furthermore, he dwells on the decisions of the numerous judges and on the interactions between data protection and antitrust laws.

Chapter four, written by Isabella Austoni, is based on the second pillar of analysis on the applications of Artificial Intelligence, namely that of the social control of new technologies. It examines the potential violation of human rights and reflects on the problem of the legality of inventions made through AI. The fifth, sixth and

seventh chapters, respectively drafted by Philipp Fabbio, Emanuela Arezzo and Marialaura Rea, explore in detail the subject of AI through the disciplines of designs right, copyright and trade secret. Chapter eight, by Silvia Scalzini and Mariateresa Maggiolino, focuses on the limits for using information stored in databases for training Artificial Intelligence systems. The first part of the book concludes with a note by Gabriella Muscolo on the legal and economic reasons behind the problem of AI patenting and the current state of European regulations.

The second section of the work tries to define the role that AI is assuming with increasing impact within corporate law and governance, focusing on the applications of technology for the operating model and functioning of bodies. Chapter ten by Niccolò Abriani dwells on the use of digital and algorithmic devices within corporations and on the topic of sustainability of corporate governance. The next chapter, by Chiara Picciau, explores the role of Artificial Intelligence for corporate decision-making, suggesting that technology will soon take the place of board members. Giulia Schneider in chapter twelve seeks to critically highlight the interdependent relationship between digitalisation and the sustainability of corporate governance. The author concludes that a «sustainable» corporate governance can only be achieved through a legitimate and public interest-oriented management of data. Finally, the last chapter of this section deals with the potential use of intelligent technology in the initial phase of a new company's constitution, through a comparison between European and Italian regulations conducted by Federico Maria Mucciarelli.

The third and final part of the book is divided into five chapters. This last section portrays the use of AI within the financial sector, to identify the best regulatory approaches. In the fourteenth chapter, Valeria Falce, Antonella Sciarrone Alibrandi, Filippo Annunziata, Maddalena Rabitti and Michele Siri describe the new Proposal for a Regulation on Artificial Intelligence and the European regulatory strategies for FinTech.

The following chapters discuss some areas of the financial sector where the use of AI is already common practice. The purpose is to encourage a better and easier coordination between the Proposal and the Digital Finance Package. Chapter fifteen, by Valeria Falce, deals with the use of intelligent systems for the provision of automated financial advice through digital platforms. Chapter sixteen, by Filippo Annunziata,

delves into different payment services, while chapter eighteen, drafted by Maddalena Rabitti and Antonella Sciarrone Alibrandi, describes the role of independent authorities and the choices that the European Commission is making regarding the use of AI in relation to RegTech and SupTech. Chapter seventeen, edited by Michele Siri, dwells on the appropriate protection, governance and control mechanisms that financial operators must provide when using AI systems.

All these diverging topics and opinions come to a common agreement in the end. The surge of artificial intelligence has since impacted so many different branches of the law, that it is of utmost importance for these two worlds, law and AI, to work together to regulate the new digital State.