

cides, but only its own).

The author also dwells on the issue of the so-called subjectivisation of AI.

He notes that the most advanced juridical studies now almost unequivocally recognise the juridical subjectivity of AI (both the robo-robot and the one that does not express itself through a robot): he therefore believes that this demonstrates that subjectivity is not to be identified with the person; the latter is in fact only a part - albeit a very important one - of the range of juridical subjectivities that the legal system conceives.

In this sense, he agrees with the theories that register an overcoming of the anthropocentric conception of juridical subjectivity, also in the light of the case law of the interests that, over time, has intervened on this subject (and has recognised the subjectivity of forests, glaciers, animals, etc.).

The legal system, he affirms, can undoubtedly recognise and appreciate new interests, so much so as to subjectivise them; the only limitation lies in the person, who must not in any way be harmed by these recognitions (but rather must benefit from them in terms of increasing his protection).

Consequently, Caterini, expressly taking up Kant's idea that the moral agent is responsible for his actions, states that the autonomous decision-making capacity of the subjectivized machine must necessarily correspond to an autonomous responsibility. The topic is obviously central, so much so that it has been addressed both by the Italian doctrine and by the European Union (as to the studies of the Italian doctrine on this point, see, among others, the contributions published in E. Gabrielli and U. Ruffolo (eds.), *Intelligenza Artificiale e diritto*, in *Giurisprudenza italiana*, monographic issue, 2019, reviewed by the writer on the IRPA Observatory on the Digital State: <https://www.irpa.eu/ai-recensione-fascmonogr-post/>); as to the attention paid by the EU to the topic, see in particular the European Parliament Resolution of 2016; for a comment, if you wish, N. Posteraro, *Robots, autonomous decisions and civil liability. The Parliament asks the commission to intervene*, available on: <https://www.irpa.eu/robot-decisioni-autonome-e-responsabilita-civile-il-parlamento-chiede-alla-commissione-di-intervenire/>).

In conclusion, the essay shows how the discussion on the potential of AI must always be conducted within the prism of the values of the person: the person is the fulcrum of the legal system and must be understood from an axiological and ontological perspective; innovation

must not lose the social dimension of mankind and must, on the contrary, develop in its potentiality the capacity for cooperation between men. Through AI, the effectiveness of human rights and duties can be guaranteed, but their mechanism to access by social actors can also be simplified.

It is clear from the text how important the commitment of the jurist (in particular, the civilist) is: he must strive to act so that the law increases the rate of sociality, assuming an interpretative position that is consistent with the fundamental law of the Republic.

In this perspective, Caterini innovatively specifies that artificial intelligence is an instrument of social sustainability; that is, thanks to its ability to look to the future, it can be a facilitator that drives and facilitates actions towards sustainability, to be understood as the general principle of the Italian-European legal system according to which the legal phenomenology of the present must respect and preserve the future.

Caterini's book demonstrates that, in addition to being a problem of law, AI is also a problem that affects, among others, the anthropological and social levels.

The book summarises a constant dialogue of the jurist with the other sciences; it confirms how the legal scholar who wants to deal with the subject must necessarily take into account the other disciplines and the other sciences.

The risk otherwise is that his research will become meaningless and incomplete.

The work is part of the research activities related to the PRIN 2017 project entitled "Administrative reforms: policies, legal issues, and results"; an Italian version of the review has been published in the IRPA Digital State Observatory (irpa.eu) (NICOLA POSTERARO).

**T. WISHMEYER, T. RADEMACHER (eds.),
Regulating Artificial Intelligence, Cham,
Springer, 2020**

The review of this volume offers an articulated view of an extremely topical subject that is far from having been thoroughly dealt with at both European and national level, in a constant pendulum, swinging between the improvement of human activities and risks of pathological drifts of the phenomenon of AI.

Regulating or complying with regulations on artificial intelligence is a need that can no longer be postponed, in terms of a global problem that goes well beyond not only the concerns of EU

Member States, but of European structures themselves.

The most interesting challenges arise where advanced machine learning-based algorithms are deployed which, at least from the perspective of the external observer, share important characteristics with human decision-making processes. This raises important issues with regard to the potential liability and culpability of the systems. At the same time, from the perspective of those affected by such decision-making or decision support systems, increased opacity, the new capacities, or, simply, the level of uncertainty injected into society through the use of such systems, lead to various new challenges for law and regulation.

The book is divided into two parts, the first dealing with legislative foundations of artificial intelligence and the second on governance and public policy in the field of artificial intelligence.

The introductory chapter (W. Hofmann-Riem ed.) - opening the whole investigation - aims to analyse, in general terms, challenges that AI proposes to jurists, trying to circumscribe the potentially unlimited scope of the impact they may have on human activities, through an analysis of the level of impact, legal aspects, with particular attention to governance levels. It highlights responsibilities of governments in the setting up of appropriate models of digital public policies, with the involvement of private actors, through a detailed analysis of the gaps, so far revealed on the topic. In addition, the potential weaknesses of the legislative systems so far are noted, including the lack of transparency, and possible solutions are identified, including a hybrid mode of regulation.

The first chapter of the first part (N. Marsch ed.) deals with one of the most controversial issues of the whole subject, i.e. the right to personal data protection, in an attempt to find a dialectical synthesis between potentially perennially conflicting topics, with an emphasis on the need to open the door (35), with reference to problems related to the approach to this subject provided by German Federal Constitutional Court. The chapter deals with the issue of machine-learning mechanisms and profiles linked to GDPR. The subject is dealt with from the perspective of constitutional strength of German law, with reference to the balance between rights to self-determination and limitations placed on other values. The need to regulate the issue by identifying a specific responsibility of the legislator in this respect is stressed (48).

The second chapter of the first part (C. Ernst

ed.) deals with self determination in artificial intelligence systems with a study of practical applications in life and health insurance (54) and financial transactions (55). The subject is studied from the perspective of the risks (57) to self-determination and with the study of the conditions within which it is necessary and appropriate to make legislative interventions, whether rigid or soft-law (60), with a distinction between direct and indirect effects (64, 70).

The following chapter (T. Wischmeyer ed.) studies with analytical detail the theme of algorithmic transparency, which is often obscure, a sort of oxymoron, as can be seen from the reference made in the title to the 'black box', "opening the black box, so it is argued, is indispensable to identify encroachments on user privacy, to detect biases and to prevent other potential harms" (76). The issue must be analysed and conversely regulated with a difference between the public and private sector with reference to the legal notion of secrecy (84). According to Author, the relationship between transparency and algorithms must be emancipated from "false absolutes" (93), because it is "Important for the future design of this architecture is the distinction between access to information and explanation" (94).

The fourth chapter of the first part (A. Tischberek ed.) deals with the issue of discrimination risk linked to algorithmic systems, since "the phenomenon of discriminatory AI can be traced back to three different kinds of insufficiencies: flawed data collection, flawed data aggregation, and normative unresponsiveness" (104). "Antidiscrimination law in its present state of development is not powerless in the face of discriminatory AI. It particularly benefits from a fundamental doctrinal shift that occurred long before discriminatory systems could give rise to legal problems" (109), "a forbidden discrimination presupposes causation between an outlawed ground of discrimination and a specific disadvantage" (110). The issue, which is extremely acute in both EU and US law, with regard to causation to establish liability for the discriminatory system, "antidiscrimination lawsuits are faced with serious problems of evidence" (110). One of the solutions examined by doctrine and courts concerns so-called indirect discrimination, known in US law as 'adverse effect', to ensure a causal link even where liability boundaries are blurred (112). It is noted that the law must be supplemented by statistical data, since "As antidiscrimination law must heavily lean on disparate impact doctrine when being confronted

with discriminatory AI, concepts alone do not suffice to effectuate non-discrimination, nor do the case-specific facts of a particular incident. Instead, the law is in need for general empirical knowledge about the everyday realities of protected groups. Such knowledge will regularly be formed and transferred by way of statistics” (116), since at least “The effectiveness of anti-discrimination law hence directly relies on enhanced extra-legal knowledge” (118).

The following chapter (J.-E. Schirmer ed.) deals with the relationship between AI and legal personality, in the exclusive panorama of German law. «The question of legal personality is related to the agency discourse», “Intelligent agents no longer acting deterministically leads to a high degree of unpredictability. This in turn brings about a novel ‘autonomy risk’» (128).

The issue intercepts the related problem of connection and imputation/responsibility. Since “granting intelligent agents legal personality could indeed have a positive impact on German (and most other continental) civil law. Once intelligent agents are considered persons under the law, the ‘responsibility gaps’ many civil law systems face today would be filled” (132). Author reports on a ‘halfway status’ made in Germany, the provision of ‘Teilrechtsfähigkeit’, i.e. partial legal capacity, because “It stands for the sense that law itself can mold its actors according to its own particular terms and conditions” (135), without rigid predeterminations.

“German civil law offers a template for such a ‘halfway solution’, the concept of Teilrechtsfähigkeit, a status of partial legal subjectivity based on certain legal capabilities. When applied, intelligent agents would be treated as legal subjects insofar as this status followed their function as sophisticated servants. This would both deflect the ‘autonomy risk’ and fill most of the ‘responsibility gaps’ without the negative side effects of personhood” (140).

The second part of the book, ‘Governance of the Through Artificial Intelligence’, leads off with a chapter on the relationship between AI and social media (C. Krönke ed.), that examines legal questions and problems raised by the increasing use of AI tools on social media services, in particular from the perspective of regulations specifically governing (electronic) media. “Based on the two most fundamental functions of law, media regulation in general and content regulation of information society services in particular can be divided into two categories: protective content regulation and facilitative social media regulation. The role that AI (can) play for

regulation lies crosswise to these two regulatory concepts: in both concepts, AI can be the object (‘regulation of AI’), but also the means of regulation (‘regulation through AI’), since “from the perspective of media law, protective content regulation covers avoiding, eliminating or at least labelling unwanted or even illegal content, and attributing responsibility (in the sense of liability) for such content to certain actors (users or providers)” (151). “Regulators are in principle also entitled to introduce facilitative regulations in order to safeguard diversity of opinion in the long term. To this end, they can take particular account of the widespread fears that the economically driven use of AI for the targeted selection, arrangement and display of content by providers might lead to serious bias effects on social media users, at least in the long run” (170).

The next chapter (G. Buchholtz ed.) deals with AI and legal tech and the scope of rule of law, “legal tech covers all informations technology used in the legal field - and it is inextricably tied to data. Legal tech is an umbrella term for any algorithm-based technology in legal matters - private and public use included” (177), “serious criticism of legal tech concerns the (legal) conditions under which software is developed. This process takes place far beyond state control. It has rightly been criticised that ‘software development’, even open source, is opaque, and concentrated in a small programming community, many of whom are employed by few oligopolistic corporations directly accountable to no external party” (185). In relation to regulatory arrangements and public policies in this area, it is noted that “the traditional ‘command and control’-approach must be rejected as inappropriate. Instead, legal regulation must redesign its accustomed unilateral and deterministic control structures and move on to communication” (190). The chapter revisits a theme already addressed in other parts of the book, “a lack of transparency and control might prevent people from fully exercising their rights” (192), since “Legal tech can be brought in line with the rule of law only by means of law and human factor” (197).

The third chapter of the book’s second part (Y. Herstrüwer ed.) deals with the risk of uncertainty structurally inherent in algorithmic administrative decisions, on how AI can guide administrative action under risk and uncertainty. Author’s premise is based on the reflections since “Machine learning has the potential to make administrative agencies smarter, fairer and more effective. However, this potential can only be exploited if administrative law addresses the implicit

normative choices made in the design of machine learning algorithms. These choices pertain to the generalizability of machine-based outcomes, counterfactual reasoning, error weighting, the proportionality principle, the risk of gaming and decisions under complex constraints” (199). “Each administrative procedure begins with an investigation of the facts. In cases involving risk and uncertainty, the administration is only required to gather sufficient information prompting the reasonable conclusion that a legally protected interest (e.g. physical integrity) is at stake”, since automatics reason not with the completeness of the information and “This requirement cannot easily be met in an investigation directed with the aid of machine learning based-predictions, since these predictions are based on statistical regularities” (200). The subject is dealt with in the context of the ordering and particularly pervasive dialectic that links prediction and decision, precisely because of the choice of that investigative and decisive content to be placed at the basis of the administrative determination. Among the most problematic aspects of the topic, Author observes that “Machine learning algorithms entail two distinct, but related problems of incomplete or asymmetric information. The first relates to the lack of knowledge about how machine learning algorithms fare in comparison to human judgement. The second relates to the lack of information about the reasons why a prediction or decision was made, on what factual grounds it can be contested and how behavior may be changed to alter future decisions” (210), on the appropriate premise that traditional administrative activity is not without risk of uncertainty and human error. Conclusions of the work point out that “an important administrative task will be to supervise the training phase and embed basic normative constraints in the objective functions used by machine learning algorithms. Administrative agencies will need to conduct a process of conceptual disambiguation in order to bridge the gap between technology and legal doctrine. Machines are just as good as their input. Humans in administrative agencies are one of the main sources of their input. The democracy principle will require technology-sensitive legal rules to steer these inputs and push the cognitive boundaries of administrative decision making” (220).

The next chapter (T. Rademacher ed.) deals with the relationship between AI and law enforcement, since the premise that “technology already fulfills the task of detecting suspicious activities better than human police officers ever

could” (225), with specific reference to the German, European and US context, with analysis of the judgments of the Courts of reference to appreciate the judicial interpretation. Author, with an analysis that takes into account the human senses and the extent to which AI is not able to ensure the same degree of balancing of interests, comes to the conclusion that “if AI technologies actually work well enough - with the standard of ‘enough’ being dependent on the respective field of application - then legislators and law enforcement agencies should consider their use”, since “the availability of technology to implement perfect law enforcement forces us to decide if, where, and when society might wish to preserve the freedom to disobey the rule(s) of law” (250).

The fifth chapter of the second part (J. Schemmell ed.) partly abandons the purely publicist perspective and refers to the application of AI in financial markets to understand how the business model changes, even if in this field, “there is also no doubt that the profound transformation is still in its nascent phase”. The approach to AI in field of financial markets seems to be a necessity rather than a choice, because “Algorithms have supported buying and selling on financial markets since decades. The steady expansion of machine trading has been propelled by the same reasons as the development of robo-advisors: higher efficiency, lower costs, fewer errors, quicker execution, and extended data computing. The market environment nowadays is shaped by ‘supercomputers’. In the digital age, trading without algorithmic support seems at the very least imprudent” (258). Among the issues addressed, from the perspective of different legal systems, the Author notes that “One of the greatest challenges of AI is its lack of auditability. Regulation and supervision of financial markets depend on the rational and assessable behaviour of its participants. The more opaque the models are, which are shaping investment decisions, the harder it becomes to accurately evaluate the state of markets. Even though there are technical limits to the replicability of automated decisions, it will be of crucial importance to insist on rudimentary explanation at the very least” (270).

The next chapter (C. Djefal ed.) deals with the issue of public governance and AI compatibility profiles related to normative guidelines for the use of artificial intelligence in Germany against the backdrop of international debates. It is noted, that in relation to regulation that “The law offers binding guidelines for the develop-

ment of artificial intelligence. It sets boundaries for technology to ensure individual rights and safeguards public interests. But this is not the only function of law in the development of technology. The functions of law can also be described as relating to motivation, limitation and design” (283), since “In addition, the law also has a design function. In this capacity, it influences the process of development, advancement and application of technologies in society” (284). “The possible outcomes and consequences of this technology can only be conceived when AI is simultaneously understood as an opportunity and a danger, when it is simultaneously developed from a technical and social point of view, and when it is viewed from the perspective of the humanities, social sciences and natural sciences” (290).

The next chapter (N. Braun Binder ed.) deals with the issue, from a tax point of view in its problematic boundaries, of the possibility of applying IA to taxation processes, on the premise of the introduction, as of October 2017, of the Taxation Modernization ACT in German law, since “tax assessments as well as the offsetting of withholding tax and advance tax payments are allowed to be processed automation-based, provided no reason exists for a case to be handled by public officials” (296). The tax problem intercepts more sensitively than in other areas the problem of personal data protection, based on existing European and German provisions.

The next chapter (S. Jabri ed.) addresses the sensitive issue of interference between AI and healthcare, with “a procedural perspective and presents the main features of the European regulatory framework that applies to medical devices in order to identify the regulatory peculiarities in the use of machine learning” (307), with an approach linked to German and European public choices and policies. The theoretical premise that characterises the whole study is that “the immanent risks of machine learning applications as medical devices as well as the role of machine learning in their regulation. The overall finding is that due to its lack of expertise and material equipment the state activates private companies for market access control, which are commissioned with the preventive inspection of medical devices” (307).

The conceptual approach leads, albeit partially, to the consideration that “Medical Devices Law is in a state of flux, not least due to the increasing technical development. The European legislator seems to have recognized that software

as a medical device is associated with new challenges in market access as well as in post market-entry surveillance. Compared to static systems, learning machines as medical devices in particular display a specific knowledge deficit which may have to be countered with specific regulatory instruments” (332).

The ninth chapter of the second part (F. Molnár-Gábor ed.) returns to the topic of algorithmic health management, with reference to responsibility and the relationship between doctors and patients, since “The potential for incorrect decisions (and the question of who is responsible for such decisions) in cases where AI is used in a medical context calls for a differentiated implementation of medical ethical principles and a graduated model of liability law” (337) with the search for a balance between benefit and risk of unaccountability of the administrations, “While AI can potentially empower patients, it can also have restrictive effects on their self-determination (and dignity)” (344). “The establishment of liability based solely on malpractice law for both the lack of information on possible malfunctions of an AI system in the frame of informed consent and for errors in treatment is confronted with difficulties. Consequently, and as we move towards an increasing independence of AI systems, liabilities thus will tend to concentrate on the producer of the AI system. However, challenges also surround the establishment of producer liability, and there are also question marks over the interplay of medical malpractice law and producers’ liability” (354). The paper draws attention to the most sensitive issues, without drawing definitive conclusions that are impossible to draw from the current state of affairs.

The last chapter of the book (M. Hennemann ed.) analyses the circumstance of the applicability of IA to competition law. The need is underpinned, with specific distrust of primary legislation, to preserve market balances and not to alter the law of competition, with the provision not to create zones of non-liability for anti-competitive behaviour (**VINICIO BRIGANTE**).