

CYBER LAW

1. Introduction

The advent of the information age and the overbearing imposition of the models, first of the Techfin and, then, of Fintech have strengthened and reinforced the global dimension of the economy and markets, significantly changing the global economic and social situation.

Technological transformations - digitalization, automation, artificial intelligence - and above all the spread of the internet and the web have changed the choices of medium and long-term economic policies. They influenced the structure and scope of the markets, the choices and strategies of businesses and economic operators, as well as the logic and policy of competition.

Thanks to these models, the economy has reached a global dimension, as the free movement of capital and the possibility of promoting investments without frontiers have been increased.

Moreover, new players and new operators have appeared on the markets - usually intermediaries -, new markets for goods and services have flourished, as well as new relationships with the recipients of goods and services - retailers consumers - and new authorities have been established. supervision, or rather the powers of the already existing authorities, at national, European and international level, have been increased.

These innovations concerned the subject of electronic payments, distance contracts concluded through digital technologies, smart contracts, blockchains, bitcoins, and ADRs carried out using digital technologies.

Even consumers and investors and retails investors have not been spared from the digital revolution; Stefano Rodotà proposed to insert an amendment to the art. 21 of our Constitution, on freedom of expression of thought, providing access to the internet, since the internet represents one of the tools for disseminating culture, knowledge and therefore the promotion of the person.

Marc Augé dwelt at length on the changes in the world economic situation caused by the information revolution, which intensified the number and speed of exchanges and, therefore, marked the passage from a model in which relations took place in places and

between subjects well defined to a model in which relationships are standardized and objectified and take place in virtual spaces. On a legal level, the model that had favored contract law and economic law gave way to the model that favors the dehumanization of the contract and the depersonalisation of contractual relationships which, as anticipated by Giorgio Oppo in unsuspected times, are addressed not to a community but to an anonymous mass of users.

A veritable computer and digital revolution, which calls for a resolute intervention by the legislator and supervisory authorities to prevent fraud, money laundering, tax evasion, collusion and agreements that restrict competition; and urges the intervention of the legislative and government bodies of the Union in order to build a digital single market, competitive with those of the United States, China and the emerging countries.

In truth, with respect to the speed with which this technological-IT revolution was presented and developed, the law has encountered serious difficulties in updating traditional categories and institutions and promoting new and more in step with the times.

The establishment of a new law, the Cyberlaw, which addresses and resolves the problems deriving from the application of Fintech, it is desirable, perhaps with the specific characteristics of the soft law rules, which allow it to be applied transversally and in a cross-border manner and therefore to enjoy greater ductility. The European Union has shown interest and attention towards these phenomena through the numerous studies carried out in this regard and the regulatory interventions, but also the supervisory authorities, such as Consob and Banca d'Italia, have provided valid contributions on the subject¹.

The European Parliament Resolution of 17 May 2017 on financial technology (2016/2243 INI) invites the Commission "to draw up a comprehensive action plan for FinTech in the framework of its strategies for the Capital Markets Union and for the Digital Single Market, which can contribute in general to the achievement of an

¹ Per la Banca d'Italia si vedano: Panetta, *Fintech and Banking: today and tomorrow*, in occasione dell'Annual Reunion of the Harvard Law School Association of Europe, organizzato a Roma il 12 maggio 2018, sul sito www.bancaditalia.it; Barbagallo, *Fintech: Ruolo dell'Autorità di Vigilanza in un mercato che cambia*, intervento al Convegno Invernale 2019 della Associazione dei docenti di economia degli intermediari e dei mercati finanziari e finanza d'impresa, in www.bancaditalia.it; per la Consob si vedano i Quaderni Fintech nn. 1/2018, 2/2018, 3/2019, 4/2019, di AA.VV., pubblicati sul sito www.consob.it.

efficient and competitive European financial system, more in-depth and more integrated, stable and sustainable, providing long-term benefits to the real economy and meeting the needs in terms of protection of consumers and investors and regulatory certainty ”.

The "Action Plan for financial technologies: for a more competitive and innovative European financial sector", dated 8 March 2018 (Commission Communication 2018, 109 final), states that "financial technologies represent the meeting point for services financial markets and the digital single market. The financial sector is the main user of digital technologies and an important driver of the digital transformation of the economy and society. There are important synergies between the Commission's strategy for the digital single market², the EU cybersecurity strategy³, the eIDAS regulation⁴ and financial services initiatives such as the action plan for consumer financial services⁵ and the mid-term review Union of Capital Markets (UMC)"⁶.

The subject of cryptocurrencies has been, and still is, the object of analysis, especially as regards the qualification of the nature of cryptocurrencies, which have a "course" and a market value, which allow purchases to be made and exchanged and bought on certain digital platforms, but which do not seem to qualify as a real currency, since they are not issued by central banks, nor are they subjected to state or over-sovereign sovereignty, being created by private autonomy.

The right to the protection of privacy and the protection of the person detects through the assumption of the fundamental rights of the right to the protection of personal data, the protection of the digital identity, the consent to the processing, the control of the treatment, the relative procedures the transfer, use, interconnection of data, and the consequent responsibilities borne by all parties involved in the data market⁷.

² COM(2015) 192 final - Strategia per il mercato unico digitale in Europa.

³ JOIN(2017) 450 final - Resilienza, deterrenza e difesa: verso una cibersicurezza forte per l'UE.

⁴ Regolamento (UE) n. 910/2014 del Parlamento europeo e del Consiglio, del 23 luglio 2014, in materia di identificazione elettronica e servizi fiduciari per le transazioni elettroniche nel mercato interno e che abroga la direttiva 1999/93/CE.

⁵ COM(2017) 139 final - Piano d'azione riguardante i servizi finanziari destinati ai consumatori: prodotti migliori, maggiore scelta.

⁶ COM(2017) 292 final - Comunicazione sulla revisione intermedia del piano d'azione per l'Unione dei mercati dei capitali.

⁷ Zorzi Galgano (a cura di), *Persona e mercato dei dati. Riflessioni sul GDPR*, Milano, 2019.

The proposal for a reform of the e-privacy regulation was recently presented by the European Commission on 10.1.2017 (COM2017 10 final) and complementary to the privacy regulation contained in the recent GDPR. The essential aims of the new regulation are set out in the introductory report, according to which: "the proposal aims to make the level of protection of privacy and personal data processed in relation to electronic communications more effective and to increase the level of data protection pursuant to articles 7 and 8 of the Charter of Fundamental Rights of the European Union and to guarantee greater legal certainty. The proposal complements and governs the general data protection regulation. Effective protection of the confidentiality of communications is essential for exercising freedom of expression and information as well as other related rights, such as the right to protection of personal data or freedom of thought, conscience and religion ".

Consumers are given an action plan for financial services, approved on March 23, 2017 (COM2017.179 final), which deals with the main aspects of the transactions that consumers combine with banking and financial institutions and with third parties; issues of transparency and commissions on cross-border transactions are investigated, the costs and rates of currency conversion, the transfer of data and bank accounts to facilitate the change of the service provider, the improvement of motor insurance, with the related principles of transparency; the directives on consumer credit and distance selling of financial services are taken into consideration, which should be updated in the light of new technologies, together with the facilitation of cross-border credit.

The European Parliament issued the Resolution of 16.02.2017 containing recommendations to the Commission concerning "civil law rules on robotics", with which it invited the Commission to propose common European definitions of cyber-physical systems, autonomous systems, intelligent autonomous robots and their sub-categories; favored the introduction of a global Union system for the registration of advanced robots in the EU internal market; stressed that the development of robotic technology must aim at integrating human capabilities and not replacing them, being essential that, in the development of robotics and artificial intelligence, men maintain control over intelligent machines at any time; he called for particular attention to the fact that an emotional attachment can develop between men and robots,

especially for vulnerable groups (children, the elderly and the disabled), which could have a serious emotional and physical impact on men.

The set of rules, however, is more complex: the rules of primary rank must be supplemented by second-degree regulations, supplementary to the former, and guidelines that guide and assess the standards of operator behavior.

As you can see, the European model consists of an intense program of interventions that should reconcile the needs of the competitive market with the protection of personal data, digital identity and favor, through access to digital services, operations not only between professionals but also between professionals and consumers.

This model tends to combine market discipline with the protection of fundamental rights and, more specifically, to combine market discipline with internal regulation, not in an authoritative way, as was the case in the nineteenth and twentieth centuries, but also through the regulatory acts of independent agencies, which protect the needs of the market, coordinating them with those of stakeholders, with the aim of renewing the systemic order in a liberal key for the construction of a new European Union.

Professor Guido Alpa was among the first to understand how the intersections between law and technology would have affected the activity of jurists and, more generally, the overall legal system understood⁸. Artificial intelligence applications are now widespread in every context, starting with banking and insurance. Defining what artificial intelligence is is not easy at all. As we read in one of the latest reports from the Aspen Institute Italia, "to paraphrase Alan Turing, AI can indeed be defined as the science of making computers do things that require intelligence when done by humans; or, more properly, like that sector of computer science that deals with creating intelligent machines able to perform tasks and solve new problems, to adapt to the environment and understand it, and to understand natural language"⁹. There is no single definition of artificial intelligence.

⁸ ALPA, *Cyber law. Problemi giuridici connessi allo sviluppo di internet*, in *Nuova giur. civ. comm.*, 1998, 385 ss.; ID, *Postfazione*, in *Il contratto telematico*, a cura di RICCIUTO e ZORZI, in *Trattato di diritto commerciale e di diritto pubblico dell'economia*, diretto da GALGANO, 2002, XXVII, Padova, 2002, 345 ss.

⁹ Rapporto dell'Aspen Institute Italia, *Intelligenza artificiale come nuovo fattore di crescita*, luglio 2017, 1, che riprende quanto affermato da ALAN TURING, *Computing Machinery and Intelligence*, in *Mind, New Series*, 1950, v. 59, n. 236, 433-460.

The AI consists of algorithms that can process data and provide answers. At the base of the process there are, therefore, a series of mathematical operations independent of the physicality of the machine through which one operates. The applications of Artificial Intelligence are therefore not necessarily perceived in the materiality of a corpus mechanicum, rather they qualify themselves for operating on the basis of an automated process that starts from inputs injected into the system by human beings, acquires and processes information and is able to provide a result (output), and is able to correct and expand it¹⁰. The Artificial Intelligence therefore refers to those systems which, on the basis of the analysis of the data coming from the environment in which the AI is located, process said information in order to arrive at a given result¹¹.

As anticipated, Artificial Intelligence is becoming increasingly important in the market, especially in relations between businesses and retail customers. The technology is used starting from the automated customer assistance services for the exchange of basic information, up to the most complex c.d. chat bots, able to understand the needs of each client and provide personalized answers. See also the platforms of machine learning and deep learning, where the algorithms underlying the functioning of these systems are so sophisticated that they allow the technology to make decisions in a *latu sensu*, autonomous way. Consider, for example, the artificial intelligence systems used by e-commerce platforms to predict - and suggest - customer purchases, based on data analysis concerning preferences, consumption habits and personal characteristics¹².

¹⁰ C. TREVISI, *La regolamentazione in materia di Intelligenza artificiale, robot, automazione: a che punto siamo*, in *www.medialaws.eu*, 2, maggio 2018.

¹¹ Nel *Draft Ethics Guidelines For Trustworthy AI*, pubblicato dalla Commissione Europea il 18 dicembre del 2018, l'IA è così definita: «*Artificial intelligence (AI) refers to systems designed by humans that, given a complex goal, act in the physical or digital world by perceiving their environment, interpreting the collected structured or unstructured data, reasoning on the knowledge derived from this data and deciding the best action(s) to take (according to pre-defined parameters) to achieve the given goal*». Nella legge USA di fine 2017, denominata *Fundamentally Understanding the Usability and Realistic Evolution of Artificial Intelligence Act of 2017*, l'IA è definita «*any artificial systems that perform tasks under varying and unpredictable circumstances, without significant human oversight, or that can learn from their experience and improve their performance [...]*».

¹² FINOCCHIARO, *Il contratto nell'era dell'intelligenza artificiale*, in *Riv. trim. dir e proc. civ.*, 2018, 441 ss.; BRAVO, *Commercio elettronico*, in *Enciclopedia del Diritto, Annali*, Milano, 2012, 253. Il tema era già stato affrontato nel 1973 da Stefano Rodotà in un volume che è stato recentemente ripubblicato, RODOTÀ, *Elaborati elettronici e*

2. The contract of the third millennium

To analyze the evolution of contract law at the time of artificial intelligence, it is necessary to start from the synallagmas that are defined as the c.d. automation contracts. Within this category it is possible to place the c.d. telematic or computerized contracts, in which the status of "IT" relates to the fact that they are stipulated in electronic form or digital contracts issued or signed with digital signature¹³. Indeed, automation, applied to the agreement, is a modality that has been used for some time in the execution and conclusion of contracts and is the result of industrial and economic progress, for example, look at vending machines for goods such as food and drinks. The evolution of technology and cyber law has allowed us to create computer programs capable of operating in a (semi) autonomous manner. This is the case of smart contracts, which are IT systems under which it is possible to perform contractual operations. Their peculiar characteristic lies in the fact that they are electronically programmed through alphanumeric code strips based on distributed registers. The potential applications of smart contracts are many and, in recent years, the use of these models is always higher. First of all, it must be emphasized that they are instruments that make contractual regulation more flexible since this can be more easily pursued to meet the needs of the contractors and to adapt to the contingent circumstances¹⁴. Through these contracts 4.0, which use

controllo sociale, a cura di ALPA, Napoli, 2018. L'Autore, con sguardo lungimirante, ha affrontato il tema dell'utilizzo e dell'abuso dei dati e ha anticipato il cambiamento dei rapporti di forza tra individuo e operatori del mercato. L'Autore sottolineava come le nuove tecnologie avrebbero potuto influire non solo sulla vita privata di ciascun individuo, ma avrebbero potuto condizionarne la vita sociale. Il volume trae origine dall'introduzione, proprio all'inizio degli anni Settanta, di una nuova categoria di elaboratori elettronici basati su circuiti integrati monolitici con grande capacità di elaborare celermente un numero estremamente alto di informazioni. Detti elaboratori elettronici erano gli antesignani dei *personal computers* che sarebbero stati immessi sul mercato di lì a qualche anno.

¹³ ALPA, *Il contratto in generale, I, Fonti, teorie, metodi*, in *Tratt. dir. civ. comm.*, diretto da CICU, MESSINEO, MENGONI continuato da SCHLESINGER, Milano, 2014, *passim*; CAGGIANO, *Il contratto nel mondo digitale*, in *Il contratto del Terzo Millennio. Dialogando con Guido Alpa*, a cura di GATT, Napoli, 2018, 55 ss.

¹⁴ Per un inquadramento generale del tema si veda, *ex multis* DI SABATO, *Gli smart contracts: robot che gestiscono il rischio contrattuale*, in *Contratto e impresa*, 2017, 378 ss.; CUCCURU, *Blockchain e automazione contrattuale. Riflessioni sugli smart contracts*, in *Nuova giur. civ. comm.*, 2017, 107; DI MAIO, RINALDI, *Blockchain e la rivoluzione legale degli Smart Contracts*, in <http://www.dirittobancario.it>.

blockchain technology¹⁵, a digitalisation of contractual autonomy is realized, *latu sensu*¹⁶; in fact, the traditional structure of the conclusion of the agreement is translated into computer programs and the contractual text becomes an encrypted code that can be read by hardware enabled to do so. Thanks to this cybernetic algorithm, the contract is self-executing and the program independently provides for the application of the clauses, the performance of the service and to "model the execution of the service according to the different needs and to adequately manage the different events that occur"¹⁷. Therefore, the profiles of self-execution and self-enforcement are those that characterize smart contracts and feed their popularity¹⁸. To these two we can add a third - which can be considered as a variable of the first profile - which is the management of contingencies. It is clear, in fact, that the provision of a contractual model capable of linking to an impulse a reaction connected to it makes the rebalancing of the services easier and faster following the occurrence of unforeseen events, suitable for affecting the negotiated content established by the parties. The introduction of these instruments could, therefore, support the interpreters in

¹⁵ Gli *smart contracts* sono stati ideati prima della tecnologia *blockchain*. Difatti, il primo *smart contract* è stato realizzato nel 1994 da Nick Szabo, con il modello della *vending machine*. Un sistema, quello ideato dall'informatico statunitense, caratterizzato dal fatto che la gestione della vendita di un determinato bene viene effettuata da *software* e *hardware* della macchina distributrice, mediante la verifica della consegna del prodotto desiderato non appena sia effettuato il deposito del denaro da parte del compratore. Ma è stato solo con la tecnologia *blockchain* che gli *smart contracts* hanno avuto ampia e rapida diffusione. Detto sistema ha, dunque, rappresentato la cinghia di trasmissione dei "contratti intelligenti". Si è operato applicando la *blockchain* alla piattaforma *ethereum* e attraverso questa si è cristallizzata definitivamente la volontà delle parti, così da assicurare quale effetto utile la produzione di un determinato risultato al verificarsi delle condizioni pattuite. Sul punto si veda WERBACH, N. CORNELL, *Contracts Ex Machina*, in *www.ssrn.com*, 2017.

¹⁶ Non tutti gli *smart contracts* sono contratti, alcuni *smart contracts* non fanno altro che recepire la volontà contrattuale che è stata dichiarata in altre sedi. Ovviamente, la dottrina si sofferma unicamente sulla prima categoria. Sul punto si veda FINOCCHIARO, *op. ult. cit.*, 443.

¹⁷ DI SABATO, *op. ult. cit.*, 383.

¹⁸ È possibile distinguere differenti tipologie di *smart contracts*. La dottrina straniera distingue gli *smart contract* forti da quelli deboli, sul punto si veda RASKIN, *The Law and Legality of Smart Contracts*, in *Georgetown Law Technology Review*, Vol. 1:2, 2017, il quale sostiene che la società non è pronta per uno *smart contract* forte e ciò non solo in virtù del costo particolarmente elevato, «technology and societies are far away from [...] pure strong smart contracts. Both are more comfortable with "weak smart contracts", such as an easily revocable money transfer between two large financial institutions where a court could simply order the transfer undone or modified if necessary».

the management of contingencies that, as is known, can make the execution of the performance of the contracts of duration and in those with deferred execution more burdensome¹⁹. Said theme, using the tools of civil science as well as those that the economic analysis of law provides, is constantly declined in contracts of duration between companies where one of the problems is the allocation of risks that were not previously included in the synallagma²⁰. The change in contingent circumstances, however, is not always antithetical to the interest in keeping the contractual relationship alive. However, the general remedies of the legal system are essentially ablative, ie, they tend to remove the contract²¹. The logic behind the provision of ablative remedies in the order is (abstractly) acceptable: once the previous synagogue has been removed, the parties are free to enter into a new and different contract that takes into account the new circumstances. The opposite of the aforementioned category of remedies are those of a maintenance nature, which pursue a conservative purpose of the negotiating relationship. A number of remedies specifically provided for by the general regulations governing contracts and the regulation of certain types of contracts respond to this logic²². From a strictly conventional point of view, the management of contingencies can vary from

¹⁹ ROPPO, *Il contratto*, in *Tratt. di dir. priv.*, a cura di IUDICA e ZATTI, Milano, 2011, 943, il quale osserva che «sono rari i contratti a esecuzione rigorosamente immediata e istantanea (...). È molto più frequente che il contratto proietti la sua esistenza funzionale oltre la conclusione, per un tempo più o meno lungo. E mai il futuro è uguale al presente: sicché il programma negoziale si trova ad essere attuato in un contesto diverso da quello esistente al momento in cui le parti lo hanno concordato». ALPA, *Il contratto in generale*, op. cit., passim.

²⁰ DE MARZO, *Ritardi di pagamento nei contratti tra imprese: l'attuazione della disciplina comunitaria*, in *I contratti*, n. 12, 2002, 1162.

²¹ ROPPO, *Il contratto*, cit., 967 ss.; MACARIO, *Le sopravvenienze*, in *Tratt. del Contratto*, a cura di ROPPO, vol. V, Milano, 2006, 498 ss.

²² A titolo esemplificativo si pensi alla rettifica dell'errore di calcolo, alla riduzione ad equità del contratto rescindibile, alla riduzione della controprestazione in caso di impossibilità parziale, alla modificazione dell'incarico del mandatario in presenza di sopravvenienze e, da ultimo, all'interpretazione adeguatrice delle pattuizioni negoziali, ispirata a buona fede, su quest'ultimo punto si veda ALPA, *La completezza del contratto: il ruolo della buona fede e dell'equità*, in *Vita not.*, 2002, 611 ss. Nell'interpretazione ed integrazione della volontà dei contraenti, peraltro, si discute sul ruolo della qualificazione del negozio. In tema ancora ALPA, voce *Rischio* (dir. vig.), in *Enc. Dir.*, vol. XL, Milano, 1989, 1150, il quale sottolinea che nella soluzione delle controversie i giudici non fanno altro che decidere in merito alla distribuzione del rischio contrattuale tra le parti. In caso di contratti atipici «la giurisprudenza distribuisce il rischio prevalentemente mediante la scelta del "tipo contrattuale". Con la scelta del tipo si pregiudica, già ab origine, il piano di distribuzione dei rischi tra le parti».

agreement to agreement and, as a rule, this variation reflects the parties' strength / weakness positions, information asymmetries, the contractors' own qualities which, by virtue of subjective considerations, can decide whether or not to be prudent, can include clauses in the contractual regulation that provide for the permanence of the constraint, appropriately modified, upon the occurrence of certain facts. As with legal remedies, even conventional remedies can be of an ablative or maintenance nature²³.

In this context, the role assumed by smart contracts is fundamental to contribute to the creation of conventionally pre-established maintenance systems that have already been "tested" in the same circumstances. As already mentioned, automated contracts are present in various commercial sectors and are normally used for purchases of everyday consumer goods, for the purchase of tickets and so on: "the evolution of technological progress it has also made it possible to interact with the machine in a certain way: the buyer or user has different options and is able to modify the content of the offer, adapting it to their needs. The further step forward, achieved thanks to modern technology, consists in the possibility that the parties also entrust performance of the performance and management of the entire contractual relationship to an algorithm, a robot. This opportunity obviously has a decisive effect on the management of contractual relationships of a duration or deferred execution»²⁴. The advantage of using smart contracts is represented, first of all, by the quantity of variables that a computer system can process and register, and this would determine the possibility of neutralizing the risk of contingencies²⁵.

In Italy, in the first months of 2019, they were introduced with the c.d. Simplification Decree²⁶ the definitions of Distributed Ledger Technology (or the technology behind the Blockchain) and smart contract²⁷. The aforementioned regulatory provisions

²³ MACARIO, *op. ult. cit.*, 708 ss.

²⁴ DI SABATO, *op. ult. cit.*, 388.

²⁵ In merito alla gestione del rischio contrattuale e delle circostanze esterne, ALPA, voce *Rischio*, cit., 1156, evidenzia che questa esigenza «*imporrebbe alle parti di elaborare una lista completa di tutte le possibili conseguenze che possono risultare dal loro accordo, e di stabilire cosa debba accadere in ciascuna ipotesi. In pratica, però, una procedura di questo genere sarebbe estremamente lenta e dispendiosa*».

²⁶ L. 11 febbraio 2019, n. 12.

²⁷ Le definizioni riportate all'interno del nuovo art. 8 *ter* rubricato "Tecnologie basate su registri distribuiti e smart contract" - pubblicato in Gazzetta Ufficiale il 12 febbraio 2019 (Serie Generale n. 36) - appaiono di particolare interesse proprio perché

- together with, in part, the provisions of the V Anti-Money Laundering Directive (Directive (EU) 2018/843) and the Bank of Italy reports - represent the first attempt to configure, within the legal system, new legal cases aimed at the potential definition of all the tools, activities and platforms based on Blockchain Technology systems. Certainly it must be considered only as "the first step" of a legislative activity on the subject still in its infancy. This first work of systematization that confers legislative dignity to this type of technology can only be greeted favorably by the interpreters as well as by the operators of the sector.

3. Robo Justice

The technology finds (rectius could find) its concrete application also in the judicial area²⁸. In other countries²⁹ it is a subject

sembrano costituire il primo vero inquadramento giuridico -anche se ancora parziale- delle fattispecie alla base di qualsivoglia strumento e/o attività crypto. Lo *smart contract* è definito come «un "programma per elaboratore" che opera su tecnologie basate su registri distribuiti e la cui esecuzione vincola automaticamente due o più parti sulla base di effetti predefiniti dalle stesse. Soddisfa il requisito della forma scritta previa identificazione informatica delle parti interessate, attraverso un processo avente i requisiti fissati dall'Agenzia per l'Italia Digitale con linee guida da adottarsi entro 90 giorni dall'entrata in vigore della legge di conversione del decreto legge». Mentre la definizione delle Tecnologie basate su registri distribuiti (ossia *Distributed Ledger Technologies*) è la seguente: «le tecnologie e i protocolli informatici che usano un registro: condiviso; distribuito; replicabile; accessibile simultaneamente; architetturealmente decentralizzato su basi crittografiche, tali da consentire: la registrazione; la convalida; l'aggiornamento; l'archiviazione di dati - sia in chiaro che ulteriormente protetti da crittografia - verificabili da ciascun partecipante, non alterabili e non modificabili».

²⁸ Il Prof. Alpa da tempo analizza i temi legati alla giustizia, di seguito alcuni tra i suoi lavori più recenti in materia: *Commissione di studio per l'elaborazione di una organica disciplina volta alla "degiurisdizionalizzazione"*, in *Riv. trim. dir. proc. civ.*, 2017, 793 ss.; *Arbitration and ADR. Reforms in Italy*, in *Diritto del Commercio Internazionale*, 2017, 259 ss.; *La tecnica di selezione dei casi da decidere in Cassazione. Spunti di diritto comparato*, in *Contratto e Impresa*, 2017, 329 ss.

²⁹ Nell'ordinamento francese sono state avviate iniziative di giustizia «prevedibile» sulla base di algoritmi che analizzano le decisioni delle Corti con il precipuo scopo di anticipare l'esito di un giudizio. In Francia, di recente, è stata realizzata una piattaforma digitale in grado di prevedere l'esito di un giudizio attraverso l'utilizzo di un calcolo statistico. Più nel dettaglio, tale piattaforma prende in considerazione l'ammontare dei risarcimenti ottenuti in casi simili e i punti di convergenza tra la causa in oggetto e quelle precedentemente decise. L'utilizzo di algoritmi in ambito giuridico è da tempo adoperato negli ordinamenti di *common law* con significativi risultati. Nell'ordinamento statunitense essi sono già molto diffusi. Si pensi, ad esempio, agli algoritmi predittivi del rischio di recidiva, da decenni ordinariamente impiegati nella fase preliminare del giudizio per la determinazione della cauzione; nel corso della fase pre-decisoria per la valutazione dell'eventuale definizione del procedimento con una sentenza di "*probation*" (simile all'istituto italiano della messa

already discussed, while in Italy the debate has been started only in recent times. The supporters of a judicial system based on an algorithm state that by exploiting a computer program it is possible to rationalize the decision-making process. Predictive justice provides those using the indicated algorithm system to predict the outcome of a judgment. The assumption from which we start to reach these conclusions is that the use of an algorithm can represent a law enforcement technique. In fact, the judging body cannot depart from the aforementioned legislation, it cannot, therefore, interpret the law in an arbitrary manner, since this would lead to a violation of the art. 12 of the lists. Then, pursuant to art. 101 of the Constitution, "the judges are subject only to the law". By the combined provisions of articles 101 of the Constitution and 65 ord. giud. it emerges that one of the characteristics of law is its impersonal objectivity and pre-judgments or pre-understandings are not allowed³⁰. In order for the law to be applied by an algorithm, it must be formulated in a clear and unambiguous manner³¹ and this is, without a doubt, the assumption of "legal certainty"³². However, the use of

in prova) e durante la fase esecutiva per la valutazione della concessione della libertà sulla parola (equiparabile alla liberazione condizionale). La Corte Suprema del Wisconsin ha dichiarato legittimo l'uso giudiziario di algoritmi che misurano il rischio di recidiva specificando, tuttavia, che lo strumento non può essere l'unico elemento su cui si fonda una pronuncia di condanna. In materia si vedano *ex multis* ALETRAS, TSARAPATSANIS, PREOIUC-PIETRO, LAMPOS, *Predicting judicial decisions of the European Court of Human Rights: a Natural Language Processing Perspective*, in *PeerJ Computer Science*, 24 ottobre 2016; BARRAUD, *Un algorithme capable de prédire les décisions des juges: vers une robotisation de la justice?*, in *Les Cahiers de la justice*, 2017, 121-139; ID., *Le coup de data permanent: la loi des algorithmes*, in *Revue des droits et libertés fondamentaux*, Centre de Recherches Juridiques de Grenoble, 2017; DONDERO, *Justice prédictive: la fin de l'aléa judiciaire?*, in *Récueil Dalloz*, 2017, 10, 532-538; GARAPON, *Les enjeux de la justice prédictive*, in *La Semaine Juridique - Édition Générale*, 9 Janvier 2017, n. 1-2, doct. 31, 47-52; KATSH, ORNA RABINOVICH-EINY, *Digital justice. Technology and the Internet of Disputes*, Oxford University Press, 2017; KEOWN, *Mathematical Models For Legal Prediction*, in *Computer Law Journal*, 1980, 2, 1, 829-862; LAMON, *La profession d'avocat et la justice prédictive: un bel outil pour le développement du droit*, in *Récueil Dalloz*, 2017, 14, 808 ss.; ALLEN LARSON, *Artificial Intelligence: Robots, Avatars and the Demise of the Human Mediator*, in *Ohio State Journal on Dispute Resolution*, 2010, 25, 1, 105 ss.; AA. VV., *The Apps for Justice Project: Employing Design Thinking to Narrow the Access to Justice Gap*, in *Fordham Urban Law Review*, 2017, 44, 1363-1405.

³⁰ IRTI, *Per un dialogo sulla calcolabilità giuridica*, in *Calcolabilità giuridica*, a cura di CARLEO, Bologna, 2017, 23 ss.

³¹ DI PORTO, *Calcolo giuridico secondo la legge nell'età della giurisdizione. Il ritorno del testo normativo*, in *Calcolabilità giuridica*, op. cit., 130.

³² Detto dogma, però, secondo illustre dottrina sarebbe stato scalzato da quello, forse più aderente ai tempi attuali, dell'incertezza del diritto. Sul punto si veda GROSSI,

mathematical models converted into algorithms must not scare, if the use that will be made of it will be of simple help and support to the activity of the interpreter, this can only bring obvious benefits. Artificial intelligence must be perceived as a resource and not as an obstacle to legal science. Consider, for example, the corpus constituted by the sentences emanating from a particular organ. From a mathematical point of view these are texts with a certain syntactic rigidity, which would allow their "reading" with the tools of formal logic. The analysis of this corpus conducted by the algorithm could indicate the solution that, predictably, the judging body will adopt. Furthermore, given the large number of legislative provisions still in force in the Italian legal system, the construction of a system capable of combining the mathematical model with the computer model in order to identify the exact provision to be applied, or search for solutions applicable to the concrete case, it could be of great support for the interpreters.

4. Conclusions

In the introduction to the Resolution of 16 February 2017 of the European Parliament, entitled "Rules of civil law on robotics", the European legislator acknowledges the fact that in the coming years a "new industrial revolution" will take place which, however, must be guided by the need to preserve some ethical principles including: the safety of people and their health, freedom, privacy, integrity, dignity, self-determination and non-discrimination, as well as the protection of personal data. These prescriptions represent the purpose and also the limits to which the technological process will have to tend, whose evolutions had already been understood by Prof. Alpa already several decades ago. Certainly the work of the Master, who placed at the center of his writings the fundamental rights of the person, is and will be a guide for the operators who will deal with the matter and for the jurists who have just begun to investigate the junction points between law and technology.

Ritorno al diritto, Bari-Milano, 2015, 51 ss. Si veda anche ALPA, *La certezza del diritto nell'età dell'incertezza*, Napoli, 2006.