Journal of Law & Commerce
Vol. 43, CISG Symposium (2025) ● ISSN: 2164-7984 (online)
DOI 10.5195/jlc.2025.312 ● http://jlc.law.pitt.edu

THE FORMATION OF THE CISG CONTRACTS (SMART CONTRACTS AND ARTIFICIAL INTELLIGENCE)

Pilar Perales Viscasillas

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I. INTRODUCTION

The 1980 Vienna Convention on Contracts for the International Sale of Goods (CISG) is currently the law of ninety-seven countries around the world. Part II (Formation of the Contracts) deals with the conclusion of the contract by way of the meeting of minds through offer and acceptance. CISG has been able to adapt to modern electronic means of communication such as email,[1] despite the fact that the means of communication mentioned in the CISG are the ancient telegram and telex.[2]

When dealing with the electronic contract of sale, we are referring to those in which the offer and acceptance are made by electronic means, as derived from the rules of the offer and the acceptance under the CISG.[3]

In short, we are thinking about computers—today also mobile phones—connected to a network (internet). From this perspective, every purchase and sale contract under the CISG is capable of being concluded by electronic means following the classic and universal parameter (we find it in all legal systems in the world) of consent through the two declarations of will that give life to the contract, the offer and the acceptance.

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[*] Commercial Law Professor at the University Carlos III of Madrid. Work carried out under the Research Project: *Business and Markets: Digital (R)evolution, Integrity and Sustainability and its assimilation by Private, Regulatory and Competition Law*. Reference: PID2020-114549RB-I00.

[1] *See* CISG Advisory Council, *CISG Advisory Council Opinion No. 1: Electronic Communications Under CISG* (2003), https://cisgac.com/opinions/cisgac-opinion-no1/. *See also Pomeranian Puppies Case*, CISG online-5920, C/03/293528 (D.C. Limburg 2022) (Neth.), https://cisg-online.org/search-for-cases?caseId=13834 ("Given that in Article 13 of the CISG, where telegram and telex messages are regarded as 'in writing,' the court is of the opinion that in the current era, electronic communications such as e-mail messages and WhatsApp messages should qualify as 'in writing.'").

[2] United Nations Convention on Contracts for the International Sale of Goods (CISG), Apr. 11, 1980, S. TREATY DOC. No. 98-9, 1489 U.N.T.S. 3, art. 13 (1983) [hereinafter CISG].

[3] CISG, *supra* note 2, arts. 14–24 (Part II, Formation of the Contract).

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The offer and acceptance as a mechanism well present in the life of the contract and not only in its formation since other issues such as its modification or termination are observed under those parameters.[4]

The Vienna Convention has demonstrated its flexibility by adapting and applying without problems to electronic contracting.[5] Technologies are evolving rapidly and we no longer question the validity of contracts concluded through electronic means but new and interesting perspectives emerge, as well as various legal problems that can be associated with the era of the digital economy, from the use of platforms as an intermediary in the contracting of goods or services—or simply as a meeting place or recreational or social exchange—when not as part of the commercial contracts themselves, the use of computer programs in the formation and performance of the contract, legal transactions on data, or the use of artificial intelligence in contracting.

From a legal perspective, the question is whether the CISG, which is a traditional instrument of contract law, is sufficient to respond to the problems posed by the digital economy, specifically in the rise of the so-called *SmartCcontracts* (*infra* II), and the use of Artificial Intelligence (AI) (*infra* III) in the formation of the contract.

II. SMART CONTRACTS

Smart Contracts, so-called intelligent contracts or self-executing contracts, have been extensively studied and analyzed by scholars, and in some cases have had legal *or* paralegal recognition.[6] The different authors who have dealt with these *contracts* agree that, as a general rule, they are

[4] CISG, *supra* note 2, art. 29.

[5] Pilar Perales Viscasillas, *Article 13*, *in* UN CONVENTION ON CONTRACTS FOR THE INTERNATIONAL SALE OF GOODS (CISG): A COMMENTARY 200, 203–04 (Stefan Kröll et al. eds., 2018); *see also* CISG Advisory Council, *supra* note 1. The Advisory Council is currently reviewing Opinion No. 1 and its completion is expected shortly.

[6] LAWTECH DELIVERY PANEL & UK JURISDICTION TASKFORCE, LEGAL STATEMENT ON CRYPTOASSETS AND SMART CONTRACTS 8 (2019) (U.K.) (confirming the validity of *Smart Contracts* under English law and applying the traditional rules of contract formation).

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neither contracts nor intelligent.[7] They are a set of computer programs[8] that allow their self-execution when a pre-programmed event occurs. The same consideration derives, in general, from the legislation that regulates *Smart Contracts*, since the legally coined definitions are by reference to a computer program based on decentralized registry technologies whose execution is legally binding for two or more parties in relation to the effects previously agreed upon by those same parties.[9]

It is evident that the absence of human intervention occurs in the performance of the contract through a series of previously determined protocols, which reduces transaction costs and increases the speed of transactions and their legal security, since given the predetermined conditions, the contract is executed (self-executed) without the possibility of discussion, noncompliance (totally or partially), withdrawal, or invoking exceptions to its performance (*force majeure* or *hardship*, for example). From this operational description, it is already evident that *Smart Contracts* may be suitable for some types of commercial contracts, but not for others, since precisely the dynamics and complexity of the performance of a commercial contract in many cases do not adjust to this automaticity. This is not to say that *Smart Contracts* in a closed B2B environment can be a useful, safe and reliable mechanism, particularly in the supply chain,[10] which

[7] Jonathan Rohr, *Smart Contracts in Traditional Contract Law, Or: The Law of the Vending Machine*, 67 CLEV. ST. L. REV. 67, 68 (2019) ("*Smart contract* is an unfortunate name for something that is not necessarily smart, or necessarily a contract. There is no official or universally accepted definition of the term, but everyone agrees that there is "code" involved and that this code will be self-executing upon the occurrence of certain conditions"); *see also* Eliza Mik, *Smart Contracts: A Requiem*, 36 J. CONT. L. 70 (2019); Agustín Madrid Parra, *Smart Contracts & Blockchain: Crossroad Between Technology and Law*, *in* THE DIGITAL ECONOMY: REGULATORY, CONTRACTUAL AND COMPETITION ASPECTS 119, 130 (2021); Pilar Perales Viscasillas, *La formación del contrato en el siglo XXI: ¿Una nueva era en la revolución digital?*, *in* RETOS DE LA CONTRATACIÓN MERCANTIL MODERNA 139, 139 (2022).

[8] The definition of Smart Contract is a "program written on the distributed ledger system which encodes the rules for specific types of distributed ledger system transactions in a way that can be validated, and triggered by specific conditions." U.N. ITU, ITU-T Technical Specification (2019), https://www.itu.int/en/ITU-T/focusgroups/dlt/Documents/d11.pdf.

[9] For the implementation of *Smart Contracts* in the United States, see Rohr, *supra* note 7, at 70–71. *See also* Jorge Feliú Rey, *Smart Contract: una aproximación jurídica*, *in* DERECHO MERCANTIL Y TECNOLOGÍA 395, 349–50 (Thomson Reuters Aranzadi ed., 2018).

[10] Antonio Legerén-Molina, *Los contratos inteligentes en España. La disciplina de los smart contracts*, REVISTA DE DERECHO CIVIL, 193, 205–09 (June 2018); *see also* Benito Arruñada, *Blockchain's Struggle to Deliver Impersonal Exchange*, 19 MINN. J. SCI. & TECH. 55, 75 *et seq.* (2018) (offering a convincing explanation of these extremes).

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consequently opens the door to its use within the framework of contracts for the international sale of goods under the CISG.

Regarding whether or not these *Smart Contracts* are true contracts in light of the CISG, we deny them such a condition, without prejudice to the fact that there are no major inconveniences in using the term, particularly since there is a performance of the contract without human intervention. In the recent study that the UNCITRAL Secretariat is initiating in relation to the contractual typology of the digital economy, the same conclusion is reached, considering that: "a smart contract is—at most—a program used to perform a contract in an automated manner or—at least—a program used to perform some transaction in an automated manner without any connection to a contract whatsoever."[11]

It is clear that it is the human will that is being reflected in machine language and therefore to the extent that the essential elements of the contract arise from there (consent, on the basis of offer and acceptance),[12] there will be a contract, which differs from the traditional one in that the natural language is not expressed in a directly legible writing (as could happen if the offer and acceptance are contained in emails), but will be reflected in a code, presenting the obvious advantage that, in principle, the computer protocol, if well designed, will reflect the agreements between the parties that will thus be predetermined in said protocol without the possibility of further discussions.[13] As a consequence, it is the natural language that gives life to the contract since the will is expressed by the contracting parties who freely decide to standardize their operations on the basis of a *Smart contract*.

In the case of *Smart Contracts*, the terms that are included in both the natural language and the computer version must be adhered to, since not everything that is contained in the former will necessarily be contained in the programming language. What will be electronic—in whole or in part—is the performance of the contract, which, as already mentioned, is predetermined by the will of the parties during the negotiation phase and its expression in

[11] U.N. Comm'n on Int'l Trade L., Legal Issues Related to the Digital Economy—Artificial Intelligence, ¶ 24, U.N. Doc. A/CN.9/1012/Add.2 (May 7, 2020); U.N. Comm'n on Int'l Trade L., The Use of Artificial Intelligence and Automation in Contracting, Note by the Secretariat, ¶ 8, U.N. Doc. A/CN.9/WG.IV/WP.173 (Feb. 25, 2022).

[12] CISG, *supra* note 2.

[13] On this point there is agreement in the doctrine. *See, e.g.*, Javier Wenceslao Ibáñez Jiménez, *Smart contract y notariado español: algunas claves orientadoras*, 48 LA LEY MERCANTIL 1, 3 (2018).

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computer language allows the automatic fulfillment of the contract. For these purposes, the transfer of the agreement to the computer protocol may reflect all or only part of the agreement and in turn may affect the formation and performance of the contract or only the latter.[14]

Well observed the phenomenon of *Smart Contracts*, we are faced with a contractual technique similar to the one we find in the distribution sector, with the framework or umbrella distribution contracts, and the successive purchase and sale contracts that are concluded on the basis of the framework contract.[15] In fact, *Smart Contracts* are an evolved version of on-demand or *just-in-time production systems*,[16] applying the technique of framework contracts, resulting in successive executions being automated.[17] The contract already concluded in this way may be paid according to the method agreed upon by the parties, although scholars usually considered that the most suitable payment mechanism for the conclusion and performance of *Smart Contracts is electronic* money and in particular cryptocurrencies.[18]

The validity of these contracts is beyond doubt and, in my opinion and as the doctrine points out,[19] the principle of functional equivalence applies, which allows traditional regulations to be applied to this new environment. The fact that the consent is captured in digital format, binary codes of ones and zeros that can be executed, does not detract from any of the elements necessary for its legal validity in accordance with the principle of functional equivalence. In the end, there is an offer and an acceptance in digital format programmed by a person who can be held responsible for any consent errors that may occur, that is, for the differences or errors that may exist between the will expressed in the process of expression in natural language and that expressed in binary language.

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[14] Feliú Rey, *supra* note 9, at 406.

[15] *See* Pilar Perales Viscasillas, *International distribution contracts and CISG*, *in* 15 CURRENT ISSUES IN THE CISG AND ARBITRATION 43, 43–58 (Ingeborg Schwenzer et al. eds., 2014) (considering the application of the CISG to distribution framework contracts; doctrine that can also be applied to Smart Contracts).

[16] Marina Echebarría Sáenz, *Smart contracts y problemas jurídicos de los pagos con tecnologías blockchain*, *in* DERECHO MERCANTIL Y TECNOLOGÍA 347, 349–50 (2018).

[17] On the other hand, the programmed execution of a contract is found in other facets of modern life. Take for example a car factory where robots can intervene in part of its manufacturing: they assemble, weld, put screws, etc. The robotic device is undoubtedly part of the manufacturing process and therefore of the execution of a contract or future contract.

[18] Pilar Perales Viscasillas, *La compraventa internacional de mercaderías en la era digital*, *in* CONTRATACIÓN EMPRESARIAL Y DERECHO PRIVADO 291 (2023).

[19] Echebarría Sáenz, *supra* note 16, at 350, 372.

Obviously, the importance of *Smart Contracts* can be significant in the performance phase of the purchase and sale contracts given the lack of human intervention. Generally speaking, the contract will have been concluded via a framework contract (electronic or not) that is translated into machine language, that is, a computer program that is self-executed, the entire execution being automatic without the possibility of noncompliance. The advantage is the security offered by these systems because, as a general rule, *Smart Contracts* are combined with the so-called *blockchain* or decentralized registry systems and with the Internet of Things (IoT).

The questions that may arise in relation to the formation of the contract refer more to the transition from human will to machine language and the possible errors that may occur, but specifically nothing serious that cannot, in my opinion, be solved with the general rules of contract law, and with the help of computer experts, whose presence at trial will be almost obligatory both in the case of the *Smart Contracts*,[20] as in relation to litigation arising from AI. Likewise, while it is true that "the growing sophistication and complexity of automated systems is widening the distance between the parties and their declarations of will, it raises questions regarding the validity of the actions carried out to negotiate, form, and execute contracts.[21] One should not fall into exaggerations when analyzing the phenomenon.

Although the idea of *Smart Contracts* may seem totally new to us, the truth is that the law does not ignore automation processes in contractual performance, starting with ATMs or vending machines, and which go back to the traditional parameter of the *invitation ad offerendum*, the offer and

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[20] *See, e.g.*, *JAMS Rules Governing Disputes Arising Out of Smart Contracts*, JAMS, https://www.jamsadr.com/rules-smart-contracts (last visited Oct. 23, 2023). The JAMS Rules define the *Smart Contracts* as "a computer protocol intended to digitally facilitate, verify or enforce the negotiation or performance of a self-executing contract, when the terms of the agreement between the parties are directly written into lines of computer code that exist across a distributed, decentralized blockchain network." Rule 5 of the *JAMS Rules Governing Disputes Arising Out of Smart Contracts*, which provides that in the event that the parties to a smart contract are unable to agree on their rights, obligations, performance or other term of the smart contract, and to ensure that such disputes are resolved promptly, a party may initiate arbitration with JAMS such that the discovery phase will be limited to the deposition of a competent expert witness as to the meaning of the smart contract encryption. The only documentation that will be reviewed or considered by the Arbitrator will be the written contract, computer code, and expert testimony. The Arbitrator may hire an expert to answer any questions about the applicable code. All costs related to the use of the expert will be borne by the Parties equally.

[21] U.N. Comm'n on Int'l Trade Law, Provisions of UNCITRAL Texts Applicable to Automated Contracting, ¶ 7, U.N. Doc. A/CN.9/WG.IV/WP.176 (Sept. 12, 2022).

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acceptance. The exhibition of products and their price can be considered a contract offer, acceptance is manual or by card payment, and the performance of the contract occurs when the vending machine delivers the purchased good.[22] Depending on the situation, the invitation to make offers would come before the offer-acceptance sequence. Likewise, and closer to *Smart Contracts*, we cannot fail to mention other cases such as goods and services on demand, or contracts with an electronic agent, especially in relation to the IoT.[23]

Even closer is the use, at least from the 1980s, of the *Electronic Data Interchange* (EDI),[24] which made possible the automatic execution of the contract for the delivery of goods,[25] and which led to the 1994 approval of a Recommendation and a Framework Contract in Europe on the use of EDI.[26] In that Recommendation, an EDI message is defined as "the electronic transfer, from computer to computer, of commercial and administrative data using an agreed standard"[27] including EDI messages that "consists of a set of segments, structured using an agreed standard, prepared in a computer readable format and capable of being automatically and unambiguously

[22] There has been no shortage of authors who examine *Smart Contracts* in comparison with vending machines, also applying the rules of offer and acceptance: Rohr, *supra* note 7, at 74 *et seq.* (explaining other cases such as contracting a parking service at an airport or an insurance travel).

[23] For example, the refrigerator that automatically orders the supermarket to purchase products once it is detected that they have been consumed. *See* Marco Loos, *Machine-to-Machine Contracting in the Age of the Internet of Things*, *in* CONTRACTS FOR THE SUPPLY OF DIGITAL CONTENT: REGULATORY CHALLENGES AND GAPS 60 (Reiner Schulze et al. eds., 2017) (referring in his work to the "pathologies" that could occur and how to solve them with traditional contract law and in particular the rules on agency or representation more than those of offer and acceptance, although it recognizes that these will be coincident in most cases).

[24] *See generally* PILAR PERALES VISCASILLAS, LA FORMACIÓN DEL CONTRATO DE COMPRAVENTA INTERNACIONAL DE MERCADERÍAS [The Formation of the International Sale Contract of Goods] (1996) (Spain).

[25] *See* ROSA JULIÀ BARCELÓ, COMERCIO ELECTRÓNICO ENTRE EMPRESARIOS: LA FORMACIÓN Y PRUEBA DEL CONTRATO E```LECTRÓNICO (EDI) [ELECTRONIC COMMERCE BETWEEN ENTREPRENEURS: THE FORMATION AND PROOF OF THE ELECTRONIC CONTRACT] (2000) (Spain).

[26] *Commission Recommendation of 19 October 1994 on the legal aspects of electronic data exchange*, 1994 O.J. (L 338), at 98–117. The Commission recommended that commercial exchange activities be will be carried out through EDI, offering for these purposes a model framework contract: the European Model EDI Agreement, thus allowing the legal issues raised by the use of EDI to be addressed in a uniform and flexible manner, increasing legal certainty and reducing possible uncertainties.

[27] *Id.* § 2.2.

processed, and in accordance with which the validity of the contract was out of the question."[28]

However, there could be cases in which the offer is collected directly in computer code, on a web page for example, and is recorded with respect to it, so that if there are discrepancies later in the performance, they must be resolved in accordance with the general rules of interpretation.[29] The same applies in the case of the so-called M2M, or "machine to machine" contracts: that is, when the automatic execution of pre-established clauses gives rise to the conclusion of new contracts entirely carried out by the machines themselves.[30]

Even in those cases, the consent of the parties expressed in the contract code comes from a person and not from the machine. From our perspective, we are in presence of renaming the already known phenomenon of the use of automated systems such as EDI, which gave rise in the past to byzantine discussions around the validity of contracts and which today are forgotten and meaningless controversies. Even if forcing the terms, we were to understand it differently, a *Smart Contract* would have to be understood as concluded (Articles 14–24 CISG), and would be interpreted in accordance with the traditional principles and rules of the CISG (Article 8 CISG) that have been developed since the entry into force of the Convention and that have been able to adapt to the evolution of the trade, commerce and economy to digital times.

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[28] *Id.* § 2.3, § 3 *(rights of parties in the validity and formation of contract). Specifically, the section states:*

> 3.1. The parties, intending to be legally bound by the Agreement, expressly waive any rights to contest the validity of a contract effected by the use of EDI in accordance with the terms and conditions of the Agreement on the sole ground that it was effected by EDI.
> 3.2. Each party shall ensure that the content of an EDI message sent or received is not inconsistent with the law of its own respective country, the application of which could restrict the content of an EDI message, and shall take all necessary measures to inform without delay the other party of such an inconsistency.
> 3.3. A contract effected by the use of EDI shall be concluded at the time and place where the EDI message constituting acceptance of an offer reaches the computer system of the offeror.

[29] Max Raskin, *The Law and Legality of Smart Contracts*, 1 GEO. L. TECH. REV. 305, 322 (2017) ("Smart contract code can be posted to a ledger as an offer though. Once an action is taken to initiate acceptance, such as by ceding control over a certain amount of money to the code, the contract is formed."); Parra, *supra* note 7, at 139–42 (applying the rules of consent through offer and acceptance); Arruñada, *supra* note 10, at 67–75; Rohr, *supra* note 7, at 83–87.

[30] Legerén-Molina, *supra* note 10, at 215–26 (alluding to the figure of the pre-contract).

III. ARTIFICIAL INTELLIGENCE

A step beyond *Smart Contracts* occurs when we move from the automation of the process to autonomy, that is, when one or more of the stages of a contract can be detached from human intervention and there is a shortness of autonomy of action by the computer. AI allows the computer to develop or execute processes by itself, in such a way that the computer can learn and develop autonomous decisions based on its acquired learning. It is estimated that the use of AI both in commerce and for commerce, that is, as a tool or as part of goods and services (autonomous cars, for example), will provide nearly 4 trillion dollars of added value to consumers and global markets by 2022.[31] Taking into account the distinction between "AI in trade" (e.g. the supply of AI—enabled goods and services) and "AI to trade" (e.g. the use of AI systems to manage supply chains, market goods and services, and to form and perform contracts), which has been established by UNCITRAL,[32] in this section we will analyze AI to commerce in the formation of the contract under the CISG.

Given the development of technology, it is evident that computers can automate mechanical tasks with greater precision and speed than humans. To what extent they can perform other tasks, such as participating in the formation of the contract without human intervention, depends on the type of contract, the scenario or environment of the AI system in which the specific transaction operates, the type of subjects involved, and the terms that are the object of automation. Thus, there are elements of the contract—commercial and legal—that a machine, no matter how intelligent could be—at least in the current state of the technology—will not be able to capture in the process and consequently be subject to "translation" to ones and zeros. This is the case, for example, of indetermined clauses such as those that point to general principles (good faith, reasonableness or best efforts), those that assign or distribute the risks between the parties (that depend on how certain clauses of the contract are structured), and dispute resolution clauses, *versus* a forum

[31] U.N. Secretary-General, *Roadmap for Digital Cooperation: Implementation of the Recommendations of the High-Level Panel on Digital Cooperation*, ¶ 53, U.N. Doc. A/74/821 (May 29, 2020).

[32] U.N. Secretariat, *Use of Artificial Intelligence and Automation in Contracting*, Note by the Secretariat, ¶ 5, U.N. Doc. A/CN.9/WG.IV/WP.173 (Feb. 25, 2022).

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selection clause or choice of law clauses. It is even less so when, depending on the objective of the contract, a negotiation process is required between the parties that is capable of translating imperceptible issues, such as the need to compromise on some issues of the contract but not on others that may be important in the dynamic of the negotiation of the contract.[33] Especially in the context of long-term contracts, which are by definition incomplete and in a constant state of evolution, it seems difficult to apply the logic of blockchain or AI. However, AI can outperform humans in those aspects of the negotiation process that involve (or require) the processing of large amounts of information.[34]

There have been various attempts to define AI,[35] which have formed progressively.[36] In a more functional environment, AI can be described in attention to the essential elements that are required for it to deploy its potential: "AI is a collection of technologies that combine data, algorithms and computing power. Advances in computing and the increasing availability of data are therefore key drivers of the current upsurge of AI."[37] Put simply, the main elements that compose AI are "data" and "algorithms."[38]

Two distinctive ranges of AI have been identified: (1) the use of "machine learning" techniques to improve the performance of pre-defined tasks and allow for the performance of undefined tasks according to pre-

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[33] Eliza Mik, *AI in Negotiating and Entering into Contracts* (unpublished chapter in manuscript by Larry Dimateo), https://ssrn.com/abstract=3873071; *see also* Rohr, *supra* note 7, at 72; Nikolas Guggenberger, *The Potential of Blockchain Technology for the Conclusion of Contracts*, *in* CONTRACTS FOR THE SUPPLY OF DIGITAL CONTENT: REGULATORY CHALLENGES AND GAPS 94–95 (Reiner Schulze et al. eds., 2017).

[34] *Id.* at 2; Rohr, *supra* note 7, at 72.

[35] *See, e.g.*, Financial Stability Board, *Artificial Intelligence and Machine Learning in Financial Services*, at 4 (Nov. 1, 2017) ("This report defines AI as the theory and development of computer systems able to perform tasks that traditionally have required human intelligence. AI is a broad field, of which 'machine learning' is a sub-category. Machine learning may be defined as a method of designing a sequence of actions to solve a problem, known as algorithms, which optimise automatically through experience and with limited or no human intervention. These techniques can be used to find patterns in large amounts of data (big data analytics) from increasingly diverse and innovative sources.").

[36] *Commission White Paper on Artificial Intelligence—A European Approach to Excellence and Trust*, at 20 n.46, 47, COM (2020) 65 final (Feb. 19, 2020). Other definitions are contemplated in: U.N. Secretariat, Legal Issues Related to the Digital Economy: Artificial Intelligence, Note from the Secretariat, U.N. Doc. A/CN.9/1012/Add.1 (May 7, 2020) (highlighting how systems of AI resemble the kind of automated systems envisaged in various UNCITRAL texts that have been adopted over the past 25 years).

[37] *Commission White Paper on Artificial Intelligence*, *supra* note 36, at 2.

[38] *Id.* at 16.

defined objectives, and (2) the processing of large quantities of data from multiple sources.[39]

More appropriately, *AI systems* are defined in Article 3.1 of the projected LIA Regulation[40] as *software* which is developed using one or more of the techniques and strategies listed in Annex I (which addresses a principle of technological neutrality), and which can "for a given set of human-defined objectives, to generate outputs such as content, predictions, recommendations, or decisions which influence the environment with which the system interacts, be it in a physical or digital dimension,"[41] thus adopting the definition previously coined by the OECD.[42] In this definition, *software* adopts the center of gravity from a functional perspective, since it is capable of generating information, and the autonomy of the AI system is subject to the objectives that have been defined by human beings, the ultimate center of attribution of responsibility, to the extent that AI serves the contract formation process to whom the declarations of will are attributed.[43]

In fact, the AI system could be included within the definition of the "automated message system," coined in the texts of electronic commerce law by the UNCITRAL, although to the extent that the AI can perform more complex[44] tasks as "predictions," "recommendations," "decisions," "perceive," "interpret," "reason," "process") the question arises as to whether it would be necessary to normatively expand the legal texts on the matter. Apart from the fact that the discussion at an international level becomes

[39] *Use of Artificial Intelligence and Automation in Contracting*, *supra* note 32, at 25.

[40] *Commission Proposal for a Regulation of the European Parliament and of the Council establishing harmonized rules on artificial intelligence (Artificial Intelligence Law) and Amending Certain Union Legislation*, COM (2021), 206 final (Apr. 21, 2021).

[41] *Id.* at 18.

[42] An AI system is "a machine-based system that can, for a given set of human-defined objectives, make predictions, recommendations, or decisions influencing real or virtual environments. AI systems are designed to operate with varying levels of autonomy." OECD, RECOMMENDATION OF THE COUNCIL ON ARTIFICIAL INTELLIGENCE (2019).

[43] U.N. Secretary-General, *Roadmap for Digital Cooperation: Application of the Recommendations of the High-Level Panel on Digital Cooperation*, ¶ 53 n.42, U.N. Doc. A/74/821 (May 29, 2020). *See also* 2021 O.J. (C 404) 111 (At European level: European Parliament Resolution of 20 October 2020 with recommendations to the Commission on a civil liability regime for artificial intelligence. Resolution which opts for the attribution of civil liability to the operator of an AI system that is justified by the fact that it controls a risk associated with the AI system, comparable to that of the owner of a car; considering that the operator will be, in many cases, the first visible point of contact for the affected person.).

[44] Note from the Secretariat, *Use of Artificial Intelligence and Automation in Contracting*, at 3, U.N. Doc. A/CN.9/WG.IV/WP.173 (Feb. 25, 2022).; VISCASILLAS, *supra* note 24.

complex as various legal sensitivities coincide,[45] the typological issue and the normative future depends on legislative policy decisions that right now seem to be subject to regulatory pressure coming from Europe.

In our opinion, the contract formation rules under the CISG are sufficient to consider contracts that use AI systems valid and consequently, the rules on contract formation can be adapted, if necessary, to this new phenomenon of the digital age. From this perspective, AI systems (contracts in codes or algorithmic contracts) can be redirected to the parameters in which electronic offers and acceptances move through data messages and contracts that are concluded through automated systems or through electronic agents, all under the umbrella of the offer-acceptance rules in the CISG. This is confirmed by the position so far adopted by UNCITRAL in relation to AI. In the preparatory works the concepts of automated contracting defined as the use of automated systems *for the negotiation, formation and performance of contracts. In particular, those outputs could include data messages that constitute an offer, the acceptance of an offer, the terms of a contract, or some action taken in execution of those terms*.[46] In the subsequent development of the UNCITRAL works, the series of principles that govern the matter are beginning to crystallize,[47] in particular those related to the formation of contracts.

Note, for example, that contracting through online platforms—already contemplated in the traditional perspective of the CISG—uses AI in its processes—described as deterministic as opposed to those considered evolutionary that are based on *machine learning*[48]—and whose validity is not

[45] Note from the Secretariat, *supra* note 32, at 7 (showing the different positions).

[46] *Id.* at 3.

[47] Note from the Secretariat, *Provisions of the UNCITRAL Texts Applicable to Automated Contracting*, at 14, U.N. Doc. A/CN.9/WG.IV/WP.176 (Sept. 12, 2022); Note by the Secretariat, *Draft Provisions on Automated Contracting*, U.N. Doc. A/CN.9/WG.IV /WP.182 (Aug. 14, 2023).

[48] Note from the Secretariat, *Use of Artificial Intelligence and Automation in Contracting*, para. 20, U.N. Doc. A/CN.9/WG.IV/WP.173 (Feb. 25, 2022) shows the different positions: "(a) On one view, while AI systems may be more complex and capable, they should be treated no differently to other automated systems for the purposes of contract law. Both are computer programs that remain under the control of human operators. Reference is made to the existing use of AI systems to support everyday commercial activity and the 'AI effect,' whereby complex systems (e.g., systems programmed to perform a variety of undefined tasks according to pre-defined objectives) are no longer regarded as 'intelligent' as soon as they are deployed; (b) On another view, AI systems using machine learning techniques are different from automated systems in legally significant ways. On that view, the complexities and capabilities of AI systems need to be accounted for in determining how legal requirements are applied; (c) On yet another

discussed. That is, AI is capable of learning through experience and the data provided, without necessarily requiring human intervention. However, a different issue will be to determine how the will of the contracting party is reflected in the computer code, and to whom the will should be attributed, the programmer and/or the company, similarly to what we have seen happens in the case of *Smart Contracts* when we go from natural language to code language.

In the case of the so-called evolutionary or progressive and non-deterministic AI systems, the questions regarding the formation of the contract increase, but again we believe that it is not necessary to make a qualitative leap that calls into question the validity of the contract or that the general rules on formation cannot be applied,[49] including the rules of interpretation under the CISG (fundamentally Article 8) that judges and arbitrators are accustomed to applying in multiple situations. This is without prejudice of the permeability of the general rules and principles under the CISG to adapt to new realities as demonstrated by the value given to uses and practices,[50] and of course the criterion must be maintained of attribution of responsibility and will to a person. The latter raises further questions that are currently being worked on within UNCITRAL, such as the distinction between attribution (the link of the product of an automated system to a person, so that the product can be said to be the work of the person) and liability (the identification of the person who bears the legal consequences derived from the product of an automated system and the circumstances under which that responsibility must be assumed). Further, the determination of the person to whom the data messages sent must be attributed: to the person on whose behalf the system is "programmed" or the legal entity on whose behalf it "works." The last one is the criterion that seems preferable and that is crystallizing in the drafting of the principles currently underway.[51]

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view, AI systems using machine learning techniques represent a fundamental change in contracting. On that view, an entirely new legal framework may be needed for AI contracting that is distinct from a legal framework for both 'traditional' and automated contracting."

[49] United Nations Convention on Contracts for the International Sale of Goods (CISG), Apr. 11, 1980, S. TREATY DOC. No. 98-9, 1489 U.N.T.S. 3, arts. 14–24 (1983).

[50] *Id.* arts. 8.3, 9.

[51] *Provisions of the UNCITRAL Texts Applicable to Automated Contracting*, *supra* note 47, at 2–3; *Draft Provisions on Automated Contracting*, *supra* note 47, at 6.

Only reasons of convenience could lead us to speak informally and with no legal rigor about AI as the generator of a contract. Therefore, the idea that AI might be considered as the creator of the contract must be rejected and the same for the thesis of the legal personality or, at least, a certain personification of AI.

In our opinion, it is not necessary to go that far, and apply the traditional rules on the consent necessary for the formation of the contract, as derived from Articles 14-24 CISG, although if necessary relaxing or stretching the consent requirements to cover cases where AI is used.[52] The rules on formation of the contract are perfectly capable of translating new realities or complex scenarios into legal terms. For example, when in a certain situation it is difficult to find the parameters of the offer or acceptance, when silence or inaction can be considered as acceptance,[53] or when the signature of the contract is sufficient to demonstrate assent, whether or not the contract or the general conditions have been read.

From the perspective of consent, the treatment of AI as a means, not as a subject to which legal personality is granted (a decision that is a matter of legal policy), seems to us to be the best course of action at the current time.[54] Therefore, it is sufficient to consider the rules of offer and acceptance. To the extent that these rules are insufficient, it is a matter of finding the consent/will of the parties to whom the rights and obligations arising from the contract will be attributed.

Since a computer has no "personal, professional or business" interest in carrying out a contract, it is natural that the people who use AI processes, either in training or in the performance of the contract, are the ones who express their will by using the computer and programming to achieve the result (the contract).[55] The action or conduct of the parties generates a presumption that the desired result is the conclusion of a contract,[56] regardless of whether they are unaware of the specific terms in the contracts.

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[52] *See* Tom Allen & Robin Widdison, *Can Computers Make Contracts?*, 9 HARV. J.L. & TECH. 25, 30, 42 (1996) (advocating for creating a legal fiction for AI to have legal personality). In the same way that the Legal Entity is not aware that it has entered into a contract, it does not seem necessary to grant that consciousness, typical of a human being, to the AI. *See* Mik, *supra* note 33, at 3.

[53] CISG, *supra* note 2, art. 18.1.

[54] *See* Allen & Widdison, *supra* note 52, at 46.

[55] *Id.* at 36.

[56] UNIDROIT Principles of International Law Commercial Contracts 2016 Art. 2.1.1.

Since computers close the transaction, we must not forget that under contract law, future determinability of the elements of the contract, price and quantity[57] can be, for example, carried out by a third party (humans generally in the traditional conception, but nothing prevents it from being an algorithm that sets the price, whether personalized or dynamic). The degree or level of detail in relation to the information transparency required is a different question. When it comes to whether this computer is an agent of the entrepreneur, the so-called "electronic agent," it does not seem that there are certain problems unless the intention is to provide the electronic agent with legal personality, which, for the moment, is going too far.

Instead of using ingenious or new theories to define the legal problems raised by AI,[58] we agree with the authors who consider that another fiction can be used: ignoring the autonomy generated by AI—that is, its participation in complex interactions with the environment without human intervention, in such a way that the initial program evolves—and let us treat it as the means by which human intention is formulated; intention that also includes assuming the further development and evolution of the program.[59] For example, we have recently witnessed attempts to give AI a certain personification with contradictory and controversial decisions. Thus, in some jurisdictions, consideration of co-owner of an invention has been granted to AI (India), or inventor status of a patent to AI (Australia), while in others it has been denied (United States).[60] The interpretation of the consent of the parties is not petrified in its origin, and dynamic instruments can well be

[57] CISG, *supra* note 2, art. 14.

[58] *Cf.* Lord Hodge SCJ, The Potential and Perils of Financial Technology: Can the Law Adapt to Cope?, Lecture at the First Edinburgh FinTech Law Lecture at the University of Edinburgh (Mar. 14, 2019) at 12–13 (suggesting that a new English law must be constructed in contractual matter). "[I]f there is to be a contract drafted or adapted by machines, there will have to be significant development to our law of contract which will require careful and imaginative consideration." "Questions about the intention to enter into legal relations, to whom that intention is to be attributed and how the terms of a computer-generated contract are to be recorded to achieve legal validity and interpreted will require innovative thinking."

[59] Eur. Comm'n, *White Paper on Artificial Intelligence—A European Approach to Excellence and Trust*, COM (2020) 65 final (Feb. 19, 2020) at 25–26, https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52020DC0065. "Goals are defined and programmed by people, and AI systems must be optimized to achieve them. Hence the human supervision and verification systems that are planned."

[60] *See* Sanchez et. al, *Reseña de actualidad: Derecho digital [Current Affairs Review: Digital Law]*, LA LEY MERCANTIL [COM. L.], Sept. 2021, at 1–10 (Spain).

applied to solving problems that could arise due to the intervention of AI,[61] in accordance with the circumstances of the case, the application of the general principles such as reasonability, good faith, internationality and uniformity,[62] the possible application of the usages and practices, as well as subsequent behavior, etc.[63]

A parallel could be drawn between the advent of the digital economy and the newest phenomena of AI, the use of web platforms, and the so-called *Smart contracts*, in comparison with other past situations in which the law had to face to new technologies in such a way that initial prevention and distrust gave way, after a period of maturation, analysis and discussion of the phenomenon, to its acceptance.

Precisely, the legal framework developed in the wake of electronic commerce illustrates to us that we should not rush when granting new solutions that deviate from legally established principles. No matter how much complexity it offers us to understand the *Blockchain* mechanism or the algorithms, the legal analysis of the formation of the contract is simplified if we look at the basic principles of contract law well present in the CISG, and take consent, generally expressed, in the rules on offer and acceptance. Even when it is difficult for us to establish consent at any given time on the basis of such declarations, we can extrapolate the fact that contractual intent is evaluated objectively.[64]

Consequently, the CISG offers general, flexible and adaptable rules that demonstrates its resilience and the general theory of contract law has been able to adapt to the new and sometimes forceful phenomena of the use of the technologies in contracting.[65] In the current works undertaken by UNCITRAL, the preliminary idea underlying the initial studies is that the well-coined, automated systems as regulated in the instruments approved by

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[61] Pilar Perales Viscasillas, *Retos y tendencias actuales en la interpretación de los textos de la CNUDMI [Current challenges and trends in the interpretation of UNCITRAL texts]*, 306 REVISTA DE DERECHO MERCANTIL [COM. L. MAG.], 2017, at 41–76 (Spain).

[62] CISG, *supra* note 2, § 7.1.

[63] *Id.* §§ 8, 9.

[64] Mik, *supra* note 33, at 6.

[65] Rohr, *supra* note 7, at 73–74; Mik, *supra* note 33, at 3; Raskin, *supra* note 29, at 333. *See also* Eliza Mik, *From Automation to Autonomy: Some Non-existent Problems in Contract Law*, J. CONT. L. (2020); Eliza Mik, *Contracts in Code?*, 13.2 L. INNOVATION & TECH. No. 2021–52 (2021). Eliza Mik, Contracts in Code? (Aug. 30, 2021). (2021) 13.2 Law, Innovation & Technology, The Chinese University of Hong Kong Faculty of Law Research Paper No. 2021-52. Available at SSRN: https://ssrn.com/abstract=3913783.

UNCITRAL can accommodate AI. The EU, however, has approved a more aggressive—regulatory—action in the future law on AI. Regarding the formation of the contract, nothing is said except indirectly in response to the requirements of information transparency typical of the digital era, so in our opinion the sufficiency of the rules on the formation of the contract in their application to these new phenomena is evident.

IV. CONCLUSION

The CISG offers an adequate framework of general, flexible and adaptable rules that demonstrates its resistance and strength in the face of the digitalization of the economy and contracts. At the same time, it is observed at a doctrinal and legal level how we have been able to internalize technological changes quickly, in such a way that today the validity of electronic or digital contracts or the requirements for writing or signature are no longer so fiercely discussed. Therefore, we observe the phenomenon of the new era of digitalization from a more pragmatic perspective that allows us to overcome purely dogmatic discussions and continue to demand the aptitude of the traditional and classic rules of contract formation under the CISG (offer and acceptance) to continue applying to evolved phenomena such as *Smart Contracts* or Artificial Intelligence. Like Ulysses, we should not be seduced by the siren songs of the "new" law of the digital economy.

Vol. 43, CISG Symposium (2025) ● ISSN: 2164-7984 (online) ● ISSN 0733-2491 (print)
DOI 10.5195/jlc.2025.312 ● http://jlc.law.pitt.edu