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## Contractual Dilemmas of Smart Contracts Information Society Versus Contract Law<sup>[1]</sup>

### ABSTRACT

The aim of this study is to examine the issues of inserting smart contracts into our operative contract law. In this context, I am examining the positive and negative effects of this technological achievement on contract law, as well as its potential dangers. Smart contracts, like traditional contracts, require the consensus of the parties at the time the contract is concluded. The only difference is that the performance of the contract in the case of a smart contract is completely independent of the parties. This attribute could lead to the potential outcome that the application of performance and breach of contract rules in the Hungarian Civil Code—and as well in other continental civil codes—, could become inapplicable due to the lack of possibility of breaching the contract.

**Keywords:** smart contracts ■ traditional contracts ■ contractual liability  
■ breach of contract

### I. FOREWORD

Many people may have wondered if it was possible and easy to sign for example a real estate sale contract without a lawyer or notary. Contracting by the traditional way consumes a lot of time, energy and last but not least, has significant costs. Would it be possible that the technological revolution takes away the job of attorneys and notaries? Could an algorithm-driven electronic self-executing (smart) contract replace a lawyer's counter-signature or even a notarial document? This idea may seem utopian, but it hasn't bounced from the ground as much as it first seems. The ongoing Fourth Industrial Revolution is pouring out technological advances that are impacting and gradually transforming our

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lives. It creates a compulsion for renewal for the contracting parties, but increasingly also for those practicing the legal profession.

With the expansion of e-commerce, namely the “one-click contracts”,<sup>[2]</sup> the first major paradigm shift of the contract law just seems to be coming to a standstill, when this legal material that is still being formed today has to face additional and new challenges. A smart contract is a technologically existing “type of contract” that could hardly be categorized based on our current legal concepts of contract law, but at the same time its identification and contractual analysis – as far as this is possible due to its individual characteristics–, is necessary. Smart contracts are starting to permeate many areas of our lives<sup>[3]</sup> (especially the trade, banking and insurance sectors)<sup>[4]</sup> at a rapid pace. The analysis and discussion of the inclusion of these contracts in our contract law is essential in order to be able to talk about technology-compliant legislation and law enforcement in the field of smart contracts. Making smart contracts compatible with our contract law is a prerequisite for that, scientific progress should not be hindered by legislation that is considered to be progressive, or sometimes lagging behind, but on the contrary, it should function as a driving force.

In my study, after a short, sketchy overview of the IT concept of smart contracts, I am dealing with the questions of their compatibility in our traditional law of obligations and contract law. In this context, I am discussing smart contracts in a contractual analysis. Could we apply our current concepts of contract law to smart contracts. If not, or not completely, then where and to what extent needs our law of obligations to be reformed or modified? During the review of the smart contractual application of contract law standards, I pay special attention to the issues of the possibilities of breach of contract in connection with the performance of the contract, as well as to the liability for contractual damages. In the traditional sense, is it even possible to talk about contractual liability for damages in the case of a contract that, in terms of execution and fulfilment–through self-execution–actually becomes independent from the contracting parties?

## II. CONCEPTUAL BASIS

In order to examine the possibility of embedding smart contracts in our contract law, it is absolutely necessary to cover a few basic concepts to the novelty of this technology and the IT environment that defines its characteristics. The name smart contract could be associated with Nick Szabo,<sup>[5]</sup> an American computer sci-

[2] Explained later in 3.2. subsection.

[3] See more about the possibilities of using smart contracts in an employment relationship or, for example, in the tax procedure in: Ferencz, 2020, 21-28. and Király, 2019, 59-70.

[4] Király, 2020, 26.

[5] Kraus – Obrist – Hari (eds.), 2019, 105.

entist of Hungarian origin, who as early as 1994 proposed the smart contract as a code-based program, which is capable of triggering contractual/contract-like effects between the contracting parties. In Szabo's definition,<sup>[6]</sup> a smart contract is pre-programmed, coded software that executes itself when the conditions set by the parties occur, thus ensuring that the contract is performed automatically.<sup>[7]</sup>

Some authors<sup>[8]</sup> compare this operation directly to simple food and drink vending machines. In such vending machines, after selecting the appropriate food or drink and inserting the money, the vending machine – essentially like a self-executing smart contract – executes the sales contract by dispensing the chosen product, without any further intervention or external interference from the parties. This “smart contract” does not actually raise any major legal issues, as long as the vending machine is programmed to dispense soft drinks and sweets, not heroin, Max Raskin<sup>[9]</sup> points out. Beyond the specific dispensing of food and drink, the adaptation of smart contracts to implement more complex and complicated contractual terms does not necessarily require the creation of innovative and entirely new legal norms, but may primarily benefit from the use of traditional contract law concepts.

Smart contracts are becoming more and more widely applicable thanks to blockchain technology. Without going into the IT details deeply, the essence of blockchain technology is that interconnected IT devices form a shared ledger forming a decentralised public database, which, thanks to various cryptographic procedures, is able to prove the data recorded in a credible and retroactively unalterable way, without any other intermediary person or server.<sup>[10]</sup> Smart contracts are therefore based on blockchain technology, which is actually made famous by the cryptocurrency bitcoin. Many people identify smart contracts with bitcoin, however, bitcoin is just one embodiment of smart contracts, because smart contracts offer a much wider range of heterogeneous applications than their use as a “simple” means of payment.<sup>[11]</sup> In all fields of law, whether public or private, the possibility of using smart contracts necessarily arises, for example in e-commerce, in the insurance sector through automatic claims payments, in taxation, in the tax procedure<sup>[12]</sup> or in employment relations.<sup>[13]</sup>

Regardless of the field of application, the advantages of smart contracts could be mainly seen in the fact that, after “programming”, they essentially exclude the possibility of non-performance through automatic self-execution, and au-

[6] Lauslahti – Mattila – Seppla, 2017, 3.

[7] Levi – Lipton – Vasile, 2020, 155. For more on how smart contracts “work” and related IT concepts, see also: Glavanits – Király, 2018, 174-178.

[8] See also: Klass, 2022, 15. and Raskin, 2016, 306.

[9] Raskin, 2016, 306.

[10] Glavanits – Király, 2018, 175.

[11] Király, 2020, 21.

[12] Király, 2019, 59-70.

[13] Ferencz, 2020, 21-28.

tomated contract processing could save a lot of time and costs as well. This is perhaps one of their biggest advantages, as compared to traditional paper-based contracts, smart contracts do not require a third party intermediary to execute the contract. Using blockchain technology, which is not a necessary but common element of smart contracts<sup>[14]</sup>, it is possible to capture data and events in the smart contract, which are automatically executed when a pre-coded, specific event occurs.<sup>[15]</sup> This would significantly speed up the conclusion of transactions and the performance of contracts, as there would be no need to wait for legal declarations and possibly delayed legal actions by the other contracting party. Furthermore, in transactions subject to formalities, the function of the persons involved in the enforcement as indirect parties could be diminished. In my view, we are still some way off in time from a one-for-one replacement of smart contracts, such as those linked to the counter-signature of a lawyer or a notarial document, as a formality.

However, the current legislative environment is gradually moving towards digitalisation. In this context, it is worth referring the Act C of 2021 on the Real Estate Registry (hereinafter referred to as the New Real Estate Registry Act), the rules of which would enter into force on 1 February 2023, with a few exceptions. From 1 February 2023, the New Real Estate Registration Act would replace the current Real Estate Registration Act<sup>[16]</sup> (hereinafter referred to as the “Act in force”) and will introduce a number of provisions, including the switch from paper to electronic administration – sacrificing on the altar of digitalisation –, with the aim of making administration faster and more efficient. In the absence of paper-based administration, the role of the Land Registry as an intermediary is somewhat reduced, while at the same time legal representatives are given much greater responsibility for the drafting process. With the digitalisation of the land registry, the direction of the legal environment in this area is clear, and the capacity to accommodate modern technologies is undoubtedly expanding. In spite of the fact I believe that our legal system still needs to undergo significant and cardinal reforms to reach the level of full digitisation, without any intermediaries, driven by algorithms. In the case of real estate contracts this is still a long way off.

In the above-mentioned case, the potential for a breakthrough in smart contracts is hindered by nothing more than the current state of development of the smart contract itself. It is worth distinguishing between smart contracts according to the extent to which they are by their very nature capable of replacing or even, where appropriate, superseding traditional contracts. There are some authors who differentiate in this respect between smart and less smart contracts, and some even question the very legitimacy of the term ‘smart’ for these techno-

[14] Stefán, 2021, 301.

[15] Király, 2020, 25.

[16] Act CXLI of 1997 on the Real Estate Registry.

logical novelties.<sup>[17]</sup> One of the biggest advantages of smart contracts is their automaticity and self-execution, which is at least as much of a disadvantage when approached from the other side. Why do we call a contract smart if it could only carry out simple financial transactions with almost no flexibility or modification possibilities?<sup>[18]</sup> Obviously, the issue is not so black and white, as smart contracts could be used for much more serious transactions than just financial ones, and their applications are becoming increasingly widespread. However, their certain characteristics, despite their many positive features, might make them less functional than their traditionally well-established counterparts, which are not considered as smart.

### III. THE EXISTING LEGAL FRAMEWORK

#### 1. Traditional framework

In the words of Károly Szladits, “an obligation is – unless the law makes an exception – any legal relationship between specified persons whereby one party (the debtor) is obliged to perform (to act or not to act) certain conduct for the benefit of the other (the creditor) and the creditor can legally compel the debtor to pay for this conduct.”<sup>[19]</sup> In essence, this concept, which is well established in private law literature, was inherited by the legislator when it provided for the concept of obligation in the Civil Code<sup>[20]</sup> (hereinafter ‘the Civil Code’). According to the current definition of the obligation in the Civil Code, an obligation is nothing other than “an obligation to perform a service and a right to demand performance of the service”.<sup>[21]</sup> This concept is also perfectly applicable to the most common form of obligation, the contract, which is “a mutual and concordant legal act of the parties, giving rise to an obligation to perform a service and a right to claim the performance of a service.”<sup>[22]</sup> It is not by chance that both the Civil Code concepts of obligation and contract start with the conceptual elements of obligation as a legal obligation and, in connection with this, enforceability, since these conceptual elements play the most prominent role in the breach of contract stage.<sup>[23]</sup> It is in the breach of contract stage that “the bond is indeed a legal shackle, which the law does not allow to be easily shaken off, and can only

[17] DiMatteo - A. Cannarsa - Poncibó (eds.), 2020, 9.

[18] DiMatteo - A. Cannarsa - Poncibó (eds.), 2020, 9.

[19] Szladits, 1941, 2.

[20] Act V of 2013 on the Civil Code.

[21] Civil Code 6:1. §.

[22] Civil Code 6:58. §.

[23] Kemenes, 2014, 208.

be freed from it by the imposition of sanctions.”<sup>[24]</sup> Before analysing the problem intelligent contracts in relation to breach of contract, it is worth mentioning the two ancient principles which most pervade contract law and the circumstances in which contracts are concluded.

The ancient contract law principle of *pacta sunt servanda*,<sup>[25]</sup> which gives binding force to a contract, could easily apply in a smart contract law environment. Under the principle of *pacta sunt servanda*, contracts between parties must be performed in accordance with their content and the legal provisions. In a smart contract relationship, the parties could not act otherwise, since the ‘unalterability’ of a smart contract precludes the possibility of non-contractual performance. The principle of *clausula rebus sic stantibus*,<sup>[26]</sup> which also takes into account the external circumstances relevant to the parties, has been developed to counterbalance this strict principle, especially in the case of long-lasting legal relationships, and which, by easing the reins of the binding force of the contract, allows the parties to modify the obligation and, where appropriate, to escape from it. A material change of circumstances occurring after the conclusion of the contract which affects the essential legal interests of the parties allows the parties to modify or, in the last resort, terminate the contract.<sup>[27]</sup> Contrary to the principle of *pacta sunt servanda*, the validity of the principle of *clausula rebus sic stantibus*, in relation to smart contracts, is already strongly called into question, since it is a self-executing contract based on a predetermined code. The self-executing feature could offer many benefits, but it is also one of the biggest risks of smart contracts as well. If a mistake occurs in the programming, it would be executed as quickly and efficiently as the flawless contract provision and without the contributors and built-in control in the process, there is no way to restore the original state.

From the point of view of contract formation, the contract law environment in which smart contracts are to be integrated is in fact technology-neutral, so there are no major obstacles to their adaptation in this area. According to the definition in the Civil Code, a contract is formed by the mutual and consensual expression of the will of the parties.<sup>[28]</sup> Moreover, also in the section cited, and more precisely in the second paragraph, the legislator goes beyond the precondition of consensus and requires, for the contract to be concluded, agreement between the parties on matters which are essential and which either of them considers essential, if one of the parties expresses its intention not to conclude the contract in the absence of agreement on the matter in question.<sup>[29]</sup> Consensus and agreement on essential issues, as essential conceptual elements for the

[24] Leszkoven, 2018, 17.

[25] Osztovits, 2014, 143.

[26] Lukács, 2016, 6.

[27] For example: Civil Code 6:73. § (3), 6:192. §.

[28] Civil Code 6:63. § (1).

[29] Vékás, 2020, 1543. and Civil Code 6:63. § (2).

conclusion of a contract, should not, in my view, be at issue in the application of smart contracts. In the case of a smart contract, it is in fact the formation of the contract that constitutes the limit of the parties' transactional intentions, since the smart contract is then executed independently of the parties at the stage of implementation and performance. The conclusion of a smart contract presupposes consensus, so its valid formation is, in my view, hardly disputable. In contrast, once a valid smart contract has been created, and the smart contractus is essentially independent of the parties, the role of the parties' transactional will is in fact obliterated. This characteristic gradually leads us to the problem of the smart contract of contractual performance (see later in subsection 3.3).

## 2. First major signs of digitalisation in contract law

Still looking at the stage of establishment, but moving on to the question of form, it can be seen that our contract law offers several alternatives, which could also be applied to smart contracts, where appropriate. Under the provisions of the Civil Code on the form of legal declarations, a legal declaration may be made orally, in writing or by implication. All the ways of making a declaration of rights may also be used to conclude a contract.<sup>[30]</sup> In the case of smart contracts, one could even consider the use of implication as a statement of contractual intent, for example, by analogy with the purchase of goods from vending machines (be it parking or food and drink vending machines). However, electronic contracting is a much more convenient and suitable smart contracting method. Following the Directive 2000/31/EC of the European Parliament and of the Council of 8 June 2000 on certain legal aspects of information society services, in particular electronic commerce, in the Internal Market (hereinafter the Directive on electronic commerce), the 2001 Act CVIII of 2001 on certain aspects of electronic commerce services and information society services made the rules on electronic contracts part of the Civil Code. The rules on electronic contracting in the E-Commerce Directive do not apply to all contracts concluded by electronic means, so for example contracts concluded by e-mail will continue to be governed by the general rules of contract law.<sup>[31]</sup> Among the special rules for the conclusion of a contract by electronic means (website, click-through), the Civil Code imposes an additional information obligation on the party providing the electronic means. In particular, the party using the electronic means must be informed of the technical steps of the conclusion of the contract, whether the contract to be concluded is a written contract, whether the electronic means will record the contract, whether the contract will be accessible at a later date, and the means for identifying and correcting errors in the electronic recording of

[30] Welmann, 2018, 40.

[31] Welmann 2014, 30. and Fazekas – Menyhárt – Kóhidi, 2017.

data before the contract is concluded.<sup>[32]</sup>

In addition to one-click contracts, it is worth mentioning chapter XV of the Civil Code on general contract terms<sup>[33]</sup>. According to the definition in force, “a general contract term is a contractual term which is unilaterally determined in advance by the party applying it for the purpose of concluding several contracts, without the involvement of the other party, and which has not been individually negotiated by the parties”.<sup>[34]</sup> It may be questioned whether smart contracts could also be considered as general terms and conditions, since a GTC is also a ‘smart’ term and condition drawn up in advance by its user, which cannot be individually negotiated. A GTC becomes part of the contract if its content is made available to the other party by its user prior to the conclusion of the contract and is accepted by the other party. In the case of a party who is contracting with a party using the GTC, the contractual freedom is essentially limited to whether or not to contract at all with the party using the blank. The current definition of the GTCF could also serve as a starting point for smart contracts, although in the case of the GTC, the right of the user of the GTC – especially in the case of longer-term contracts – to modify the GTCF afterwards is maintained and could be implemented effectively. In the case of smart contracts, however, the right to modify the contract *ex post* on the grounds of self-executing is excluded. By its very nature, GTC, electronic one-click or one-click contracts could become the normative starting point for smart contracts.

### 3. Potential risks of smart contracts

A smart contract could bring many benefits, but it could also pose just as many questions and, in extreme cases, dangers. The question arises, for example, who should bear the damage in a contract claim based on a smart contract? Could we even talk about contractual liability in the case of smart contracts? Who should bear the damage: the parties, the manufacturer of the blockchain system that is the heart of the smart contract or the hosting provider of the database on which the smart contract was “fed”?

Highlighting the issues of contractual liability from the foregoing, could the parties be found in breach of contract situation where the parties’ transactional intentions are in fact limited to the establishment of the contract? In a smart contract, as in a traditional contract, the parties’ transactional intention is required at the time of the formation of the contract, the only difference being that the performance of the contract is independent of the parties. It follows that the application of the rules on performance and breach of contract under the Civil Code would be marginalised in the context of smart contracts, and in some cases

[32] Civil Code 6:82. § (1).

[33] Németh, 2020, 116-122.

[34] Civil Code 6:77. § (1).



would even become *ad absurdum* pointless because of the absence of any possibility of breach of contract in principle. A contract that cannot be enforced cannot be considered either a contract or an obligation, on the basis of the concept of obligation and contract as discussed above. The possibility of enforcement is necessary for a reasonable contract to be defined as an obligation. Provision should also be made for the issue of imposition of liability in the case of potential claims arising in a smart contract relationship. If it is not contractual, then provision should be made for the imposition of liability on a tort/delict basis. This issue is of particular interest because until the adoption of the Civil Code in 2013, there was a uniform system of liability for damages in contract and tort.<sup>[35]</sup> The former Civil Code in article 318,<sup>[36]</sup> combined the two forms of liability in the sense that the liability for breach of contract and the amount of damages were governed by the rules of non-contractual, the so called delictual liability, with the exception that the reduction of damages was not possible in the absence of a statutory exception.<sup>[37]</sup> By contrast, the Civil Code also made a normative distinction between contractual and delictual liability<sup>[38]</sup> and established the primacy of contractual liability by excluding parallel claims.<sup>[39]</sup>

In a situation where, in the context of smart contracts, the rules of our law of contract on breach of contract and would be declared inapplicable, the rules of delictual liability would necessarily have to be invoked. In that case, we would be faced with a contractual construction in some respects, but a contractual construction which is not valid from the point of view of contract law in other respects. If smart contracts are assumed to be contracts, but we cannot apply the contractual rules to them, it may be necessary to reconsider the prohibition in the *non-cumul* in order to resolve the contradictions mentioned above.

#### IV. CONCLUDING THOUGHTS

In my study, I have highlighted those provisions of contract law from our law of obligations that could serve as a starting point for questions of adaptability. Smart contracts, despite their many advantages, have features which, by virtue of their function, could also be disadvantageous. For example, the so-called self-execution, which may, as it happens, exclude the possibility of default or breach of the contract, but at the same time minimises, if not completely relegates, the possibility of modifying the contract. It is in this context that perhaps one of the biggest challenges for “smart contract law” arises, namely in the area

[35] Fazekas – Menyhárt – Kőhidi, 2017, 159.

[36] Fazekas, 2017, 25.

[37] Eörsi, 1998, 176.

[38] Keserű, 2017, 207.

[39] Civil Code 6:145. §.

of breach of contract and contractual liability, which is the traditional contract law area that constitutes the most problematic terrain for the incorporation of smart contracts into contract law.

The examination of the incorporation of smart contracts into our contract law is of paramount importance, as we are faced with a technological innovation that is essentially ready for use, only the legal framework needs to catch up in this area. Identifying and answering these and similar questions presented in this study is essential in order to incorporate smart contracts into our law of obligations in the near, but not too distant, future in order to establish a workable smart contract practice.

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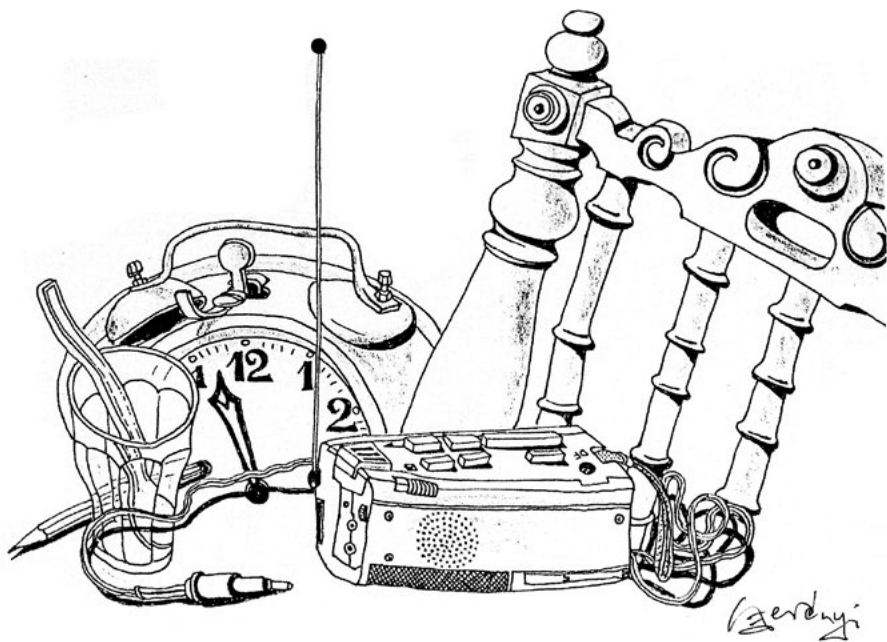
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