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Consumer Protection In the Face of Smart Contracts

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CONSUMER PROTECTION IN THE FACE OF SMART CONTRACTS

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ABSTRACT

As smart contracts increase in popularity and use, there is a greater importance for the European Union to ensure that consumers are adequately protected under their consumer protection regime. This Article evaluates the extent to which the principal European consumer protection directives can respond to the use of smart contracts. After providing background on what 'smart contracts' are and their potential benefits, this Article assesses the use of smart contracts under the Unfair Contract Terms Directive, the Consumer Rights Directive, the Unfair Commercial Practices Directive, and the directives on defective and non-conforming goods. This Article finds that while there are shortcomings in each directive, they nonetheless lay a solid foundation upon which to approach reforms and look to protecting smart contracting consumers with optimism. Lastly, this Article evaluates how reforms should be approached in an era of technological development.

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INTRODUCTION

A decade has now passed since the European Union ushered in a new age of consumer law, bringing consumers heightened protections in their everyday transactions through enacting the Consumer Rights Directive.[1] However, the landscape in which consumers operate is entering its own rebirth. Technological advancements are rapidly changing the core of every transaction, the very contract to exchange goods or services being shaped into new forms. The phenomenon of "smart contracting" is only increasing in prevalence.[2] While the technology underpinning smart contracts—blockchain—was originally

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[1] *See generally* Directive 2011/83/EU of the European Parliament and of the Council of 25 October 2011 on consumer rights, 2011 O.J. (L 304) 64 [hereinafter "Consumer Rights Directive"]. For other directives which have significantly contributed to consumer protection, *see also* Directive 2005/29/EC of the European Parliament and of the Council of 11 May 2005 concerning unfair business-to-consumer commercial practices in the internal market, 2005 O.J. (L 149) 22 [hereinafter "UCPD"]; *and* Council Directive 93/13/EEC of 5 April 1993 on unfair terms in consumer contracts, 1993 O.J. (L 95) 29 [hereinafter "Unfair Contract Terms Directive"].

[2] The term "smart contract" was seen as early as the 1990s, Nick Szabo introducing the term and its implications. *See* Nick Szabo, *Formalizing and Securing Relationships on Public Networks*, 2 FIRST MONDAY 9 (Sept. 1, 1997), http://ojphi.org/ojs/index.php/fm/article/view/548/469 [https://perma.cc/53HK-9D6W]. While the term remained relatively unknown for a period of time, "from the mining of the genesis block on the bitcoin network, Blockchain technology's popularity has seen a historic rise." *See* Deloitte, *5 Blockchain Trends for 2020*, 2 (Mar. 2020), https://www2.deloitte.com/content/dam/Deloitte/ie/Documents/Consulting/Blockchain-Trends-2020-report.pdf. Moreover, some in the industry, such as Antonio Senatore, have found that 2020 "is the beginning of the decade of Blockchain," *id.* at 2.

[2] *See* Gwyneth Iredale, *List of Top 50 Companies Using Blockchain Technology*, 101 BLOCKCHAINS (Dec. 26, 2020), https://101blockchains.com/companies-using-blockchain-technology/. Some of the companies include HSBC, Barclays, Visa, Ford, and Walmart.

limited to Bitcoin, its use has spread to some of the world's largest companies.[3] It is therefore crucial to analyze the potential effects on consumers as the use of blockchain and smart contracting quickly spreads to consumer interfaces.[4]

There is growing debate as to whether smart contracts should be adopted. Many have heralded the use of smart contracts, finding that they can bring serious benefits to consumers,[5] while others have advocated against the use of smart contracts due to their exposing consumers to several risks.[6] However, what is largely missing from the discussion is how smart contracts will apply to the existing consumer protection regimes. The development of smart contracts is nearly inevitable. Analysis on how consumer law will presently respond to smart contracts is therefore crucial.

Through applying smart contracts to the existing consumer protection frameworks, both advantages and deficiencies become readily clear. At the heart of consumer law is the principle of protecting consumers, begging the question as to how reforms should be carried out. This Article ultimately seeks to demonstrate that the existing EU framework provides a suitable base to build off concerning future reforms. Consumer law is an area which requires consistency and coherence in order to ensure that consumers understand how their interests are safeguarded. While new technological developments can seem complicated and menacing, progressive reforms must take precedence above radical change where possible.

This Article proceeds as follows. Part I provides background on smart contracts, explaining their place in the typology of digital contracts, as well as the benefits that smart contracts can bring. Furthermore, Part I highlights that even in the emerging technological space of smart contracts, courts are still the adequate forum to protect

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[3] *See* Gwyneth Iredale, *List of Top 50 Companies Using Blockchain Technology*, 101 BLOCKCHAINS (Dec. 26, 2020), https://101blockchains.com/companies-using-blockchain-technology/. Some of the companies include HSBC, Barclays, Visa, Ford, and Walmart.

[4] For a number of companies already using smart contracts, *see* PolySwarm, *5 Companies Already Brilliantly Using Smart Contracts*, MEDIUM (Mar. 7, 2018), https://medium.com/polyswarm/5- companies-already-brilliantly-using-smart-contracts-ac49f3d5c431.

[5] *See, e.g.,* Joshua Fairfield, *Smart Contracts, Bitcoin Bots, and Consumer Protection*, 71 WASH. AND LEE L. REV. ONLINE 35 (2014). *See, also*, Martín Buttazzi, *What Are Smart Contracts, And How Can We Benefit From Them?*, HEXACTA (Nov. 2, 2020), https://www.hexacta.com/what-are-smart- contracts-and-how-can-we-benefit-from-them/.

[6] *See, e.g.,* Tatiana Cutts, *Smart Contracts and Consumers,* 26-50 W. VA. L. REV. VOL. 122, No. 2 (2019).

consumers. Part II moves into applying the existing EU consumer protection regime to smart contracts, evaluating its successes and shortcomings. Lastly, Part III discusses how to approach reforms in consumer law when faced with technological progression.

I. SMART CONTRACTS AND THE LAW

Smart contracts are ripe to revolutionize everyday interactions due to their ability to displace the application of the law. Trust has traditionally been seen as an insufficient means to uphold an agreement between two parties, there needing to be a greater "common [p]ower...to compel performance."[7] The law has occupied that role, creating binding mechanisms and systems to enforce contractual agreements. However, smart contracts present another route to ensure an agreement is executed. Smart contracts are automated, with computer code carrying out the agreement.[8] In addition to automation, smart contracts are also immutable, meaning they are "unbreakable" and "preclude[] outside influence."[9] Self-execution working in tandem with unbreakability ensures "[p]erformance is inevitable."[10] While traditional contracts require the law to ensure operation and enforcement, smart contracts can do so on their own.

The prototypical and ancestral example of smart contracts is that of "the humble vending machine."[11] Nick Szabo originally coined the example, finding that the example of a vending machine, first, denotes the ability to embed contractual clauses in hardware or software.[12] With the input of a coin, the vending machine will dispense the requested product and the corresponding change. Performance is automated, there being no need for an individual to deal with the consumer. Second, a vending machine functions "in such a way as to make breach of contract expensive (if desired, sometimes prohibitively so) for the breacher."[13] In one sense, a vending machine can be considered "the entire contractual environment for its transactions."[14] The potential ability for smart contracts to occupy the complete legal interaction

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[7] THOMAS HOBBES, LEVIATHAN 92 (A. R. Waller ed., 1904).

[8] *See* Max Raskin, *The Law and Legality of Smart Contracts*, 1 GEO. L. TECH. REV. 305, 309 (2017).

[9] Cutts, *supra* note 6, at 3.

[10] *Id.*

[11] *See, e.g.,* Szabo, *supra* note 2; Kevin Werbach & Nicolas Cornell, *Contracts Ex Machina,* 67 DUKE L. J. 313, 323 (2017).

[12] *See* Szabo, *supra* note 2.

[13] *See id.*

[14] Werbach & Cornell, *supra* note 11, at 324.

between parties raises the question as to the overlap between smart contracts and the law.[15]

First, this Part assesses where smart contracts fit into the typology of digital agreements, it being important for consumers to understand how smart contracts differ from their digital counterparts. With the boundaries established, this Part then moves into what benefits smart contracts can bring, and in other words, why anyone would want to use smart contracts. Lastly, this Part finds that even though the prescribed benefits of smart contracts seem to enable smart contracts to operate outside of the law, the courts should nonetheless—at least from a consumer point of view—be the body to protect consumers.

A. Smart Contracts in the Typology of Digital Agreements

Prior to assessing the benefits of using smart contracts, it is essential to distinguish the various types of digital contracting, smart contracts solely forming a specific subset. While the definition of a smart contract is not set, many have relied on the features of self-execution and unbreakability described above in order to distinguish smart contracts from other digital agreements.[16] The definition of a smart contract that this Article adopts is therefore that "a smart contract [is] an agreement in digital form that is self-executing and self-enforcing."[17] It is both features which separate smart contracts from the other types of digital agreements.

As noted by Professors Kevin Werbach and Nicholas Cornell, "[c]ontractual agreements embodied in software code, and even their automatic performance, are nothing new."[18] There are three stages in the typology of digital agreements before one reaches smart contracts.[19] The first stage is seen with electronic commerce, which continues to grow as a method to carry out transactions between consumers and traders. In 2020, ecommerce accounted for 21.3% of all retail

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[15] Some commentators find that there is no overlap between the bodies, each serving as alternatives to one another. *See, e.g.,* Alexander Savelyev, *Contract Law 2.0: «Smart» Contracts as the Beginning of the End of Classic Contract Law*, NAT'L RSCH. UNIV. HIGHER SCH. OF ECON. 1, 21 (2016), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2885241.

[16] *See, e.g.,* Werbach & Cornell, *supra* note 11, at 320 (defining "a smart contract as an agreement in digital form that is self-executing and self-enforcing"); Raskin, *supra* note 8, at 309 (finding "[a] smart contract is an agreement whose execution is automated"); *and* Cutts, *supra* note 6, at 6 (finding "[a] smart contract is computer code that negatively-automates contractual performance.")

[17] Werbach & Cornell, *supra* note 11, at 320.

[18] *Id.*

[19] *See id.* at 321, discussing Surden's "typology" of contracts.

sales, growing by 44.0% in 2020 and 15.1% in 2019.[20] Ecommerce transactions are, however, *not* an example of a smart contract. While concluded digitally, they are nonetheless "a written agreement..., its substance and execution...still dependent on humans."[21]

The second stage of the typology is "data-oriented contracting."[22] A data-oriented contract is seen where "the parties have expressed one or more terms or conditions of their agreement in a manner designed to be processable by a computer system."[23] While written language is still used, "core elements" are also expressed in computer code in order "to facilitate computer analysis, automation, or communication of their contractual obligations."[24] Therefore, unlike smart contracts, solely a "*subset* of key terms or conditions [that] would benefit from being represented as computer processable data" are expressed as such.[25] Moreover, data-oriented contracts differ from the above ecommerce transactions because "they have been purposely oriented for computer-based understandability."[26] Ecommerce agreements, on the other hand, "are intended to be read and understood primarily by people, not computers, and are expressed in ordinary language."[27]

The third stage prior to smart contracting is where "contracting parties ... enable automated, *prima-facie* determinations as to compliance."[28] These determinations are, however, "legally tentative, [being] "first-cut" determinations—rather than legally conclusive outcomes."[29] While the ability of a computer system to determine whether there has been contractual compliance takes another step closer to smart

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[20] Fareeha Ali & Jessica Young, *US ecommerce grows 32.4% in 2020*, DIGITAL COMMERCE 360 (Jan. 29, 2021), https://www.digitalcommerce360.com/article/us-ecommerce-sales/.

[21] Werbach & Cornell, *supra* note 11, at 321.

[22] Harry Surden, *Computable Contracts*, 46 UC DAVIS L. REV. 629, 639 (2012).

[23] *Id.*

[24] *Id. See also id.* at 640, Surden finding that "in a data-oriented contract, parties express some part of their contract—for example, key terms or conditions—as computer data and rules."

[25] *Id.* at 640. There are however similarities between smart contracts and data-oriented contracts, one of which is their intended audience. Surden finds that while "Data-oriented contracts...ultimately need to be understandable by [contracting] parties," "they have an additional interpretive 'audience' — computer systems." Smart contracts are also heavily directed towards being interpreted by computer systems, computer systems arguably coming before the contractual interpretive audience.

[26] *Id.* at 641-42.

[27] *Id.* at 642.

[28] *Id.* at 658.

[29] *Id.*

contracts, it does not reach a smart contract qualification due to its tentative nature. Should a party be "unsatisfied with the results of" the prima-facie determination, "[t]he legal system and other traditional mechanisms remain available to the parties."[30] Therefore, where the determination "diverges from the parties' intent, as conventionally understood in contract law, they may disregard the computerized result."[31] Conversely, smart contracts are *unbreakable* and *self-operating*, not needing another body to determine whether the tentative assessment is correct.

A final quality of smart contracts is their use of blockchain technology.[32] A blockchain is "a decentralized collection of data that is verified by members of a peer-to-peer network."[33] Blockchain technology is used "to verify, validate, capture and enforce agreed-upon terms between multiple parties."[34] The use of a blockchain ensures "the data stored is immutable and secure," which means, in other words, that "the information recorded in the blocks can never be lost, modified, or deleted."[35]

When considering the typology of digital agreements, it is only smart contracts which are the focus of this Article's analysis. While each stage brings about different shortcomings and challenges for consumers, due to the clear overlap between the other stages and traditional contracts, they are in less need of legal analysis and reform than that of smart contracts.

B. Why it is "Smart" to use Smart Contracts

Several commentators have found smart contracts to bring benefits, and in turn, encourage their use.[36] Both of the key attributes of self-execution and self-enforcement have been considered to be positives.[37] While smart contracts have shortcomings and—depending on the

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[30] Werbach & Cornell, *supra* note 11, at 322.

[31] *Id.* at 322-23.

[32] For an explanation on how blockchain technology works, *see* Lucas Mearian, *What is blockchain? The complete guide*, COMPUTERWORLD (Jan. 29, 2019), https://www.computerworld.com/article/3191077/what-is-blockchain-the-complete-guide.html.

[33] Raskin, *supra* note 8, at 317.

[34] Carlo De Meijer, *Smart working with blockchain-based smart contracts*, FINEXTRA (Sep. 30, 2020), https://www.finextra.com/blogposting/19383/smart-working-with-blockchain-based-smart-contracts.

[35] *Id.*

[36] *See, e.g.,* Fairfield, *supra* note 5; *and* Buttazzi, *supra* note 5.

[37] *See* Cutts, *supra* note 6, at 3-4, discussing how, when considering the self-executing and self-enforcing nature of smart contracts, "The final point of consensus is that

circumstances—may not be the ideal form of contracting, this Section demonstrates that the benefits of smart contracting are sufficiently numerous that smart contracts *will* be used in certain instances or at least be further developed. Their inevitable use enforces the need to assess how consumers will be protected under existing frameworks.

1. The benefits of self-execution

Self-execution first allows for greater accuracy. Due to the automated structure, "all the information regarding the contract is expressed in a conditional format, using ... if-then statements."[38] Drawing on the vending machine example above, *if* a consumer puts in money, *then* the machine will provide the consumer with a snack. Moreover, for a smart contract to function, "[t]he expression of all terms and conditions in a smart contract must be explicit[],"[39] which in turn diminishes contract law's doctrines of mistake and misrepresentation. In the English case *Raffles v Wichelhaus*, the parties disputed the validity of a contract to deliver cotton.[40] One party believed the cotton would be delivered on a ship named *Peerless* in October, while the other believed the delivery would be on another ship—also named *Peerless*—which arrived in December.[41] As there was no meeting of the minds, the court held that the agreement was void.[42] However, the use of a smart contract would have avoided the confusion altogether due to the requisite precision.[43] While "ambiguity certainly exists in programming languages, these ambiguities are less than in the real world because of the fact that there are simply fewer terms that a computer can recognize than a human can recognize."[44]

The attribute of self-execution also helps promote transparency when considering the contract's placement on a blockchain. Not only

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this is a *good thing* – for business certainly, but for consumers too." To note, Cutts ultimately disagrees with this consensus.

[38] Silas Nzuva, *Smart Contracts Implementation, Applications, Benefits, and Limitations*, 9(5) J. INFO. ENG'G & APPLICATIONS 63, 71 (2019).

[39] *Id.*

[40] *Raffles v. Wichelhaus* (1864) 159 Eng. Rep. 375, 375.

[41] *Id.*

[42] *Id.* at 376.

[43] *See* Raskin, *supra* note 8, at 324. Raskin analyzes *Raffles v. Wichelhaus*, finding that "for similar problems that may exist, the precision of cryptographic identifiers is able to dispatch with such issues."

[44] *See, e.g., id.* at 325, finding that "When lawyers or the programmers...write contracts in code, there is less of a chance for ambiguity than in natural language if only for the simple fact that artificial language must be complete and predefined, whereas natural language is infinite."

do smart contracts require terms to be clearly listed between the parties, but the "terms and conditions become explicitly visible to the different network players of the specific blockchain."[45] The transaction is "monitored and controlled by other network nodes in the blockchain,"[46] and consequently, "transparency is promoted, and issues of fraud are eliminated."[47]

Lastly, self-execution provides for greater efficiency. Once the necessary if-then conditional sequence is triggered, "the scripted contract self-executes."[48] Moreover, trigger events are not confined to an activity by one party, but can also be triggered by a date or time.[49] The ability to customize the automation of agreements allows parties to know exactly when and how their agreement will be executed, all while "not rely[ing] on human intervention."[50] Automation serves to create "a fast, resilient and robust way of contract execution."[51]

2. The benefits of self-enforcement

Turning to self-enforcement, the key benefits are security and the non-essentiality of trust. The core of a blockchain is that it is a "*trustless* public ledger," it being "trustless because the underlying mathematical rules make it extraordinarily difficult to unilaterally change the list in the face of an opposing consensus."[52] The essence of the claim is that parties do not need to trust one another because, first, the use of blockchain technology ensures the transaction is secure,[53] and second, the smart contract will apply its own rules. If one party

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[45] Nzuva, *supra* note 38, at 71.

[46] *Id.*

[47] *Id. Cf.* Werbach & Cornell, *supra* note 11, at 351, discussing how "A hacker took advantage of a bug in The DAO's code to siphon off over $60 million worth of Ether. Although clearly an attempt at theft, the hack was executed through a series of smart contracts that were formally valid within the rules of The DAO." Such could arguably be seen to be a type of fraud.

[48] Nzuva, *supra* note 38, at 71.

[49] *See id.*, finding that "a trigger event may be a date, time, or even an activity initiated by a party to the contract, such as the transfer of certain units of cryptocurrency from the customer's wallet to that of the company."

[50] *See id.*

[51] *Id.*

[52] Fairfield, *supra* note 5, at 36.

[53] Nzuva, *supra* note 38, at 71. On a blockchain, "The fact that the parties in the network are non-trusting makes them keep check of one another to ensure each transaction is carried out effectively, and that there is a uniform worldview of the status of all the transactions," *id.* Moreover, the use of cryptographic techniques "entails high encryption of data and the use of both private and public keys for reading the transactions in each blockchain, as well as executing any transaction," *id.*

does not carry out their end of the agreement, then the smart contract will not transfer what the other party has agreed to exchange. Additionally, there is no reliance on an intermediary as it is the smart contract which carries out the exchange. Parties can therefore contract without any trust for one another.[54]

The removal of intermediaries also serves to reduce costs. When considering self-enforcement, "[c]ost savings occur at every stage, from negotiation to enforcement, especially in replacing judicial enforcement with automated mechanisms."[55] If smart contracts are truly outside of the court's remit,[56] then the costs associated with court and legal proceedings would be diminished.[57] Recourse would instead be provided by the smart contract itself, the terms dictating when the agreement is executed and *if* any recourse and penalties are permitted.[58] Overall, self-enforcement and self-execution bring a number of benefits to smart contracting parties, enforcing the inevitable use of smart contracts.

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[54] *Cf.* Cutts, *supra* note 6, at 45-50 (discussing how "shifting trust from one's counterparty to a (digital or physical) machine is an advantage to the consumer only if three propositions are true: first, counterparties and intermediaries do not warrant one's trust; second, the machine does warrant trust; third, there are no other downsides that might outweigh the advantages of negative automation.")

[55] Werbach & Cornell, *supra* note 11, at 335.

[56] *See, e.g.*, Savelyev, *supra* note 15, at 21.

[57] The harmed party may nonetheless sue in court and try to utilize the legal system. However, if courts explicitly find smart contracts to not be within their jurisdiction, then the English system of legal costs falling on the losing party would disincentivize parties from suing in such instances.

It is also worth noting that *all* costs will not be eliminated. The parties' focus on the language and coding of smart contract will be increased, as "the quality and execution of the contract [will] highly depend on the input, which is basically the coded version of the contract. Therefore, if there are flaws in setting up the smart contracts, such flaws may trigger adverse effects as well as poor quality of the output generated," Nzuva, *supra* note 38, at 72. To attempt to minimize such flaws, costs will in turn be directed towards ensuring the optimal version and coding of the smart contract.

[58] *See* Werbach & Cornell, *supra* note 11, at 335 (finding that it is "possible to incorporate logic into a smart contract that permits exceptions or conditions. Enforcement could theoretically be structured to permit arbitration. Such flexibility, however, must be coded into the smart contract at the outset." Conversely, as a note, "There is no technical means, short of undermining the integrity of the entire system, to unwind a transfer.")

C. The Law as the Consumer's Protector

The self-enforcement of smart contracts draws parallels with a traditional contract's reliance on the law for enforcement. Some commentators have adopted the view that smart contracts act outside of the law, concluding that smart contracts do not need "a legal system to exist: they may operate without any overarching legal framework. De facto, they represent a technological *alternative* to the whole legal system."[59] Other academics have disputed the claim that smart contracts can "replace contract law," finding that "they serve a fundamentally different purpose."[60] Additionally, some have concluded that smart contracts are legal contracts themselves as they meet all of the requisite legal formalities.[61] The discussion on the intersection of smart contracts and contract law is fruitful and is not the focus of this Article. Instead, this Article focuses on the consumer context, which raises the question as to whether self-enforcement provides a *better* option for consumers to remedy disputes when compared to their present ability to seek recourse in the courts.

With the development of novel technologies, there is the inevitable clash between protecting consumers or allowing consumers to pursue innovative forms of agreement. Consumer law is no stranger to prioritizing consumer safety above liberty, with a great number of consumer regulations limiting the freedom of contract.[62] It is nonetheless worth addressing the claim that if smart contracts are viewed as being outside of the law, then consumers may intentionally be entering into agreements which "are *not* intended to be enforced in a legal proceeding."[63] Respecting this intent would suggest that smart contracts should be kept outside of the courts. However, specifically in the consumer context, such a view is unlikely as "it is quite different to intend that a solution will not be needed than to intend that it will be unavailable."[64] Even when consumers enter into agreements which are seen as self-enforcing, consumers are still likely to intend that legal recourse is *available*.

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[59] *See, e.g.,* Savelyev, *supra* note 15, at 21 (notably, other academics have found such claims to be "radical"); Werbach & Cornell, *supra* note 11, at 316.

[60] Werbach & Cornell, *supra* note 11, at 318.

[61] *See generally* Raskin, *supra* note 8, at 321-26.

[62] *See generally* Consumer Rights Directive; Unfair Contract Terms Directive.

[63] *See* Werbach & Cornell, *supra* note 11, at 339; moreover, finding that "[t]his lack of intent may lead to the conclusion that, even conceptually, smart contracts are not truly contracts at all."

[64] *See id.* at 340.

An interesting divergence from the clash between innovation and consumer safety is seen where academics claim that the technological innovation protects consumers better than the existing legal framework. Professor Joshua Fairfield finds that smart contracts provide more benefits to consumers than the traditional contractual ecommerce counterpart.[65] Blockchain technology "permit[s] parties not only to hold digital assets of value without banking intermediaries; [it] also permit[s] parties to transfer digital assets of value directly, on their own terms, without any institution acting as an exchange intermediary."[66] Fairfield finds that this can serve as the solution to the "courts' longstanding refusal to enforce contract terms proffered by consumers."[67] Concerning traditional ecommerce agreements, "when a website user has a form contract or terms that are not explicitly accepted by the other party and the website user continues to use the website, the user's terms are read out of the contract and are not binding."[68] Conversely, Fairfield finds that smart contracts would provide consumers with the opportunity to "express their preferences unmistakably," which would ensure that "consumer-proffered online contract terms" are recognized.[69] However, these benefits brought by smart contracts are not mutually exclusive with courts having remit over smart contracts. Indeed, a consumer's unmistakable expression of the contract's terms could simply lead to the "*courts* ... hav[ing] no choice but to recognize" the consumer's proffered terms.[70]

When considering the recognition of consumer proffered terms, the claim that smart contracts protect consumers better than ecommerce agreements rests on the heavy assumption that consumers will "reclaim their ability to negotiate in online transactions."[71] However, courts must still have the ability to protect consumers since the assumption that consumers will reclaim negotiating power is likely to

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[65] *See generally* Fairfield, *supra* note 5.

[66] *Id.* at 38.

[67] *Id.* at 39.

[68] *Id.* at 43 n.32.

[69] *Id.* at 43.

[70] *Id.* (emphasis added).

[71] *See id.* at 39. As a note, Fairfield argues that consumers can reclaim their ability to negotiate through "automated consumer-grade purchasing agents, tied to Bitcoin wallets and preprogrammed with consumer preferences," *id.* However, this Article would argue that the use of automated consumer-grade purchasing agents relies on businesses accepting their use. Fairfield raises that "[w]hen one shops at Amazon, one may pick the number of items shipped, but nothing else. There is no drop-down box for consumer terms provided," *id.* at 44. Amazon could similarly not allow the use of purchasing agents, meaning consumers would, in turn, have to take negotiating into their own hands.

fall short in practice. There is nothing to stop companies, like Amazon, to offer similar boilerplate *smart* contractual agreements. Should such occur, consumers would therefore have to spend time negotiating with the company to receive explicit acceptance of their terms, rather than simply proceed with their purchase under the company's boilerplate agreement. Notably, consumers could take the same actions now with ecommerce agreements, yet consumers nonetheless *choose* not to. Consumer interest is not building towards autonomy in negotiations, but speed. Amazon's 1-click patent is seen to be "one of its major advantages on the road to market dominance."[72] General estimates find that the 1-click button has helped Amazon "garner[]...a 5% boost in sales, which for Amazon translates into $2.4 billion."[73] If consumers are avoiding taking the time to fill out the checkout process through instead using the 1-click feature, then consumers arguably will not take the time to individually negotiate agreements. Moreover, an individual seller's terms and conditions do not rank as a leading factor in consumer purchases, it being instead: price ("with 82 percent of Amazon buyers listing it as an important shopping consideration"), which is "followed by low shipping costs and positive product review" (at 70 and 57 percent respectively).[74] It is therefore unlikely that a shift to smart contracts will bring about a change in the consumer-mindset of not committing time to negotiate agreements.

Claims of a lack of protection from the courts are also overstated when specifically viewed in the European consumer law context. As is discussed in Part II, there are several directives which provide comprehensive protection to consumers.[75] Furthermore, "just as law must also trump the market or societal norms," the "Law must always trump Code."[76] Consumers should ultimately not *lose* legal protections simply by deciding to undergo innovative forms of entering agreements.

Due to the benefits brought by the self-executing and self-enforcing nature of smart contracts, it is understandable why industries and businesses will, at the minimum, *try* to capitalize on the security,

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[72] Holly Cardew, *Amazon's 1-Click Patent Just Expired: What This Means for Other eCommerce Sites*, MEDIUM (Oct. 30, 2017), https://medium.com/@hollyc/amazons-1-click-patent-just-expired-what-this-means-for-other-ecommerce-sites-effcf01078a5.

[73] *Id.*

[74] Maryam Mohsin, *10 Amazon Statistics You Need to Know in 2021*, OBERLO (Mar. 9, 2021), https://www.oberlo.com/blog/amazon-statistics.

[75] *See infra* pp. 13-29.

[76] Geraint Howells, *Protecting Consumer Protection Values in the Fourth Industrial Revolution*,43 J. CONSUM. POL'Y 145, 150 (2020).

efficiencies, and cost-reductions that smart contracts can bring. However, these benefits do not go as far as to remove the courts from being the body to which consumers should be able to seek recourse.

II. SMART CONTRACTING – AN OPTIMISTIC ENDEAVOR IN EU CONSUMER LAW

Smart contracts provide several benefits for consumers. However, those same benefits can lead to shortcomings in the existing consumer protection frameworks. Through self-execution and self-enforcement, smart contracts "change the nature of the contract itself."[77] Their "distinctive aspect...is not that they make enforcement easier, [but] that they make enforcement *unavoidable*."[78] The unavoidability is created from a combination of automation and immutability, both of which alter the efficacy of how EU law can protect consumers.

This Part applies the use of smart contracts to four key areas of EU consumer law: unfair contract terms, the Consumer Rights Directive, unfair commercial practices, and defective and non-confirming goods. Each area serves to protect consumers from a specific set of problems, each of which is affected to differing levels depending on the use of a smart contract as opposed to a traditional contract. Additionally, should a smart contract be deemed to solely amount to "a type of code" rather than "a legal contract,"[79] then a consumer's ability to seek protection under several EU directives is eliminated.

Nonetheless, this Part demonstrates that the existing consumer protection regime lays the requisite foundation for protecting consumers. That is not to say that reforms are not required; they are. However, smart contracts can be approached in an optimistic light. The problems presented can be solved with minor reforms, and even should a smart contract not be considered a legal contract, the EU framework mitigates the risk to consumers as protection is still available in several instances. It is optimism, not fear, that should frame the discussion of smart contracts.

A. Unfair Contract Terms

An unfair contract term is a term that "has not been individually negotiated" which "causes a significant imbalance in the parties' rights and obligations arising under the contract, to the detriment of the

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[77] Werbach & Cornell, *supra* note 11, at 348.

[78] *Id.*

[79] *See* Cutts, *supra* note 6, at 5-6 (discussing how smart contracts are computer code).

consumer."[80] It is first worth noting that "unfair terms" must also be "*contractual* terms."[81] Therefore, if a smart contract is not a legal contract, then the below protections do not apply whatsoever—which notably raises larger concerns since the "weaker" party of the consumer is not protected at all under the directive.[82]

However, even if smart contracts are considered legal contracts, issues still arise. While the EU provides a comprehensive framework to deal with unfair contract terms found in traditional agreements,[83] the autonomous nature of smart contracts raises its own concerns which do not fall neatly within the EU's solutions. Should a traditional contract include an unfair term, then the term shall "not be binding on the consumer."[84] Unsurprisingly, "[a] smart contract could...include terms that are illegal, unconscionable, or otherwise legally unenforceable."[85] If a consumer finds themselves subject to an unfair term in a smart contract, their contract will still be executed through to its completion. As of now, "there is no mechanism to stop a smart contract from implementing an unconscionable term."[86]

1. How complete execution can be problematic

In some instances, complete execution of a smart contract may not differ from its traditional contractual counterpart. One term which is likely to be considered unfair under the European framework is a term which "permit[s] the seller...to retain sums paid by the consumer where the latter decides not to conclude or perform the contract, without providing for the consumer to receive compensation of an equivalent amount from the seller...where the latter is the party cancelling the contract."[87] No matter whether the contract is traditional or smart, the party in possession of the consumer's funds in such a situation is the trader. Therefore, the remedy the consumer is seeking in either instance is *ex post*, in other words, asking for the money to be returned to the consumer.

Problematic applications of smart contracts are seen where a court may find a term to be unfair, yet the smart contract will

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[80] Unfair Contract Terms Directive, art. 3(1).
[81] *Id.* art. 2(a).
[82] *See* Commission notice, *Guidance on the interpretation and application of Council Directive 93/13/EEC of 5 April 1993 on unfair contract terms in consumer contracts*, 2019 O.J. (C 323) 4, 8-9.
[83] *See generally* Unfair Contract Terms Directive.
[84] *Id.* art. 6(1).
[85] Werbach & Cornell, *supra* note 11, at 347.
[86] *Id.* at 373.
[87] Unfair Contract Terms Directive, annex 1(d).

nonetheless execute the term. A consumer would therefore, first, have to part with their funds due to the automated payment, and second, wait for the trader to pay them back under a court order.[88] A demonstration of such can be seen where a term "requir[es] a[] consumer who fails to fulfil his obligation to pay a disproportionately high sum in compensation."[89] In *Interfoto Ltd v Stiletto Ltd*, the plaintiffs sent the defendants 47 photographic transparencies.[90] Inside the bag were a set of terms, one of which provided that "A holding fee of £5 plus VAT per day will be charged for each transparency which is retained...longer than the said period of 14 days."[91] When the defendants forgot to return the transparencies, after a month, they were sent a bill of £3,783.50.[92] A lower court found that "a reasonable charge would have been £3.50 per transparency per week, and not £5 per day."[93] In turn, the court held that the amount payable should be reduced,[94] meaning the defendants need only pay the reduced amount. However, if a smart contract was used, the defendants would have *automatically* paid the whole sum as soon as the smart contract was instructed to charge the late fees. Consequently, the consumers would have been forced to pay the unreasonable sum, then sue ex post for a portion of the payment to be returned. There are several unfair term provisions which would similarly result in the consumer seeking the return of funds ex post.[95] Having the consumer be out of funds for the longer period is problematic

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[88] As a note, such may be an overly optimistic point of view. *See* Werbach & Cornell, *supra* note 11, at 373, where Werbach and Cornell find that "[b]ecause the smart contract is self-executing, an action in court finding the terms unenforceable *may have no practical effect*; the contract will be performed regardless."

[89] Unfair Contract Terms Directive, annex 1(e).

[90] Interfoto Picture Library Ltd v. Stiletto Visual Programmes Ltd, [1989] QB 433 at 435 (Eng.).

[91] *Id.*

[92] *Id.* at 436.

[93] *Id.*

[94] *Id.* at 439. The court reduced the sum due to a lack of drawing the defendant's notice to the term: "nothing whatever was done by the plaintiffs to draw the defendants' attention particularly to condition 2.... Consequently condition 2 never, in my judgment, became part of the contract between the parties," *id.*

[95] *See, e.g.,* Unfair Contract Terms Directive, annex 1(h), finding a term with the object of "automatically extending a contract of fixed duration where the consumer does not indicate otherwise, when the deadline fixed for the consumer to express this desire not to extend the contract is unreasonably early" to have a strong likelihood of being unfair; *id.* annex 1(i), finding a term with the object of "irrevocably binding the consumer to terms with which he had no real opportunity of becoming acquainted before the conclusion of the contract" to have a strong likelihood of being unfair.

as the consumer is perceived to be the "weaker party" compared to the seller.[96]

2. The elimination of certain unfair terms

On the other hand, the nature of smart contracts can serve to eliminate certain instances of unfair contract terms, the use of such a term simply being impractical to use in a smart contract. Another instance of an unfair term under the European framework is seen where the seller can unilaterally "alter the terms of the contract...without a *valid reason* which is specified in the contract"[97] or "alter unilaterally without a valid reason any characteristics of the product or service to be provided."[98] Preventing unilateral action by one party to change the contract is one of the key advantages of using blockchain technology. Blockchain functions off of a consensus protocol, meaning that "[i]nformation already contained in a verified blockchain cannot be overwritten without reaching consensus with the entire network to propagate the altered information."[99] In order to alter the terms, the seller would need to act within an explicitly provided for circumstance outlined in the smart contract; in other words, to act with a "valid reason," the term and alteration therefore not being unfair under the directive.[100]

Another unfair term which is unlikely to be seen in a smart contract is a term which "oblig[es] the consumer to fulfil all his obligations where the seller or supplier does not perform his."[101] The act of one party carrying out their obligations while the other does not is simply not possible in a smart contract. Smart contracts are based off if-then conditional language.[102] Therefore, *if* the consumer carries out their obligation, then the trader's obligations are *automatically* carried out.

Smart contracts also aid in ensuring that the terms "offered to the consumer are...drafted in plain, intelligible language."[103] The if-then structure of terms in a smart contract provide the plain effects of

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[96] *See* Commission notice, *Guidance on the interpretation and application of Council Directive93/13/EEC of 5 April 1993 on unfair contract terms in consumer contracts*, 2019 O.J. (C 323) 4, 8-9.

[97] Unfair Contract Terms Directive, annex 1(j) (emphasis added).

[98] *Id.* annex 1(k).

[99] Raskin, *supra* note 8, at 318. Raskin does, however, note that "while this is not to say that the invalid data cannot be posted, a strong effort is needed to do so," *id.* at 318.

[100] *See* Unfair Contract Terms Directive, annexes 1(j) and 1(k).

[101] *Id.* annex 1(o).

[102] *See supra* p. 5

[103] Unfair Contract Terms Directive, art. 5.

what will happen in arguably one of the most intelligible ways possible: if one does *x*, then *y* will happen. There is, however, the question of whether contract terms being written in *code* will be problematic.[104] Terms must first be "*in writing*,"[105] raising the possibility for courts to find that electronic code does not satisfy the writing requirement. Moreover, code could further be considered to *not* be plain and intelligible, but rather complex and confusing. Nonetheless, should the if-then structure be explained in lay terms, then it is more plain from a consumer point of view when compared against the lengthy terms and conditions that consumers are often subject to.[106] Therefore, in order to maximize consumer understanding, "the technology should be required to ensure that the code be interpreted and presented to the consumer in a textual form that can be the basis of an informed contract."[107] In other words, the if-then sequence should be written in plain language, in addition to its code format.

Therefore, while smart contracts can have negative effects on consumers, they also provide consumers with certain benefits, such as clarity, guaranteed performance from the trader, and the inability of the trader to unilaterally alter terms in an unfair manner.

3. Unfair terms which may ban smart contracts altogether

Lastly, the EU unfair contract term framework may ban smart contracts altogether due to the concerns of whether smart contracts fall within the legal system. A term is unfair where it "exclud[es] or hinder[s] the consumer's right to take legal action or exercise any other legal remedy."[108] Even if a smart contract is found to be a legal contract, a consumer's right to legal action may still be hindered. The novel nature of smart contracts and their potentially purely digital interactions raise concerns about a court's ability to enforce a legal

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[104] *See* Howells, *supra* note 76, at 158, asking "[h]ow can code be plain and intelligible language for consumers, especially given the strict interpretation the Court of Justice of the European Union places on this requirement? Technology should not undermine the fundamental consumer right to be properly informed."

[105] Unfair Contract Terms Directive, *supra* note 1, art. 5 (emphasis added).

[106] *See, e.g.*, *Conditions of Use*, AMAZON (May 3, 2021), https://www.amazon.com/gp/help/customer/display.html?nodeId=GLSBYFE9MGKKQXXM; *Uber Legal*, UBER, https://www.uber.com/legal/en/ (last visited Nov. 10, 2021).

[107] Howells, *supra* note 76, at 158 (citing Mateja Durovic & Andre Janssen, *The Formation of Smart Contracts and Beyond: Shaking the Fundamentals of Contract Law?*, *in* SMART CONTRACTS AND BLOCKCHAIN TECHNOLOGY: ROLE OF CONTRACT LAW (Larry A. DiMatteo, Michel Cannarsa & Cristina Poncibò eds., 2019)).

[108] Unfair Contract Terms Directive, annex 1(q).

judgment.[109] If the court's ability to protect consumers is placed in question, then the consumer's right to take legal action may be considered to be hindered,[110] and potentially even excluded.[111] Therefore, the use of smart contracts *themselves* could suggest unfairness.

Overall, the Unfair Contract Terms Directive will be a key directive as the use of smart contracts increase. While smart contracts may eliminate certain unfair terms, the shortcomings seen throughout the Unfair Contract Terms Directive highlight the importance for reform.

B. Consumer Rights Directive

The Consumer Rights Directive provides two key benefits for consumers: (1) information requirements from the trader, and (2) the consumer's right of withdrawal.[112] There is, however, a central limitation in the Consumer Rights Directive's ability to protect smart contracting consumers. The Consumer Rights Directive lists several types of contracts which it is *not* subject to, one of which is contracts "concluded by means of automatic vending machines or automated commercial premises."[113] As discussed above, an automatic vending machine is the prototypical example of a smart contract.[114] There is therefore a strong possibility that the Consumer Rights Directive's protections will not apply to smart contracts in their entirety. This Section proceeds by analyzing each benefit brought by the Consumer Rights Directive and why consumers should continue to hold these benefits, especially when smart contracting.

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[109] *See, e.g.*, Wulf A. Kaal & Craig Calcaterra, *Crypto Transaction Dispute Resolution*, 73 BUS. LAW. 109, 135-38 (2017).

[110] Ironically, if a court cannot enforce a judgment for damages, then they will equally not be able to enforce a judgment finding a term to be unfair. In either case, the consumer would be left without protection.

[111] *Cf.* Howells, *supra* note 76, at 156 ("Could it be argued terms permitting self-execution are indicatively unfair as they are 'excluding or hindering the consumer's right to take legal action or exercise any other legal remedy?' Probably not as such terms could be considered justified in the overall analysis of the contact [sic] as not being contrary to good faith") (quoting the Unfair Contract Terms Directive).

[112] *See generally* Consumer Rights Directive.

[113] *Id.* art. 3(3)(l).

[114] *See supra* notes 5-6.

1. Information requirements

The Consumer Rights Directive lays out a number of information requirements which traders must comply with,[115] such as providing the consumer with "the main characteristics of the goods or services,"[116] "the identity of the trader,"[117] "the geographical address at which the trader is established,"[118] and "the total price of the goods or services."[119] Providing consumers with the main characteristics and the total price of the goods or services is likely to be facilitated when using smart contracts due to the explicit nature of smart contracts. Consumers will likely be provided with a clear picture of the costs and what goods they are receiving from the smart contract's if-then structure.

The identity of the trader and geographic address are, however, even more important in the smart contracting context when compared to traditional contracts. On a blockchain, "the transfer of value associated with the smart contract is tied to the parties' cryptographic private keys."[120] Every transaction requires both "the public and private keys[,] from both the buyer and seller, which is recorded in the transaction data and cannot be altered by one person."[121] The use of keys can, however, create problems for consumers. First, as the keys are a representation of each party, the parties' identities are not needed. The "digital identity [can] hid[e] the associated real-world person...or[] it may give no information at all about identity."[122] There is therefore the question as to *who to sue*, since the consumer may not even know who to file suit against. A second problem consumers may face is the question of *what to sue for* if the consumer is solely dealing with another digital key. To seek recompense, "the plaintiff may need to sue to force the defendant to give up that key, or perhaps computer passwords

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[115] *See* Consumer Rights Directive, art. 6. The Directive distinguishes the information requirements for "distance and off-premises contracts," *id.* art. 6, and the "requirements for contracts other than distance or off-premises contracts," *id.* art. 5. Smart contracts more closely align with distance contracts as they are "concluded between the trader and the consumer under an organized distance," *see id.* art. 2(7).

[116] *Id.* art. 6(1)(a).

[117] *Id.* art. 6(1)(b).

[118] *Id.* art. 6(1)(c).

[119] *Id.* art. 6(1)(e).

[120] Werbach & Cornell, *supra* note 11, at 377.

[121] Fairfield, *supra* note 5, at 37.

[122] Werbach & Cornell, *supra* note 11, at 372.

protecting it."[123] While agencies have done so in the past,[124] such an approach "stray[s] quite far from the private law domain of contract."[125] Third, the consumer may also not know *where* to serve the suit against the trader. If the geographic address is hidden from the consumer, there is the practical problem of contacting the trader to inform them of the suit.

A final problem is that "[a]n individual may possess many digital identities, backed by different private keys."[126] The ability to assess the stability, reputation, and liquidity of a trader is therefore seriously hindered if the digital key being dealt with may represent an entity which is conducting a range of business that is hidden from consumers and the media. The Consumer Rights Directive's information requirements of providing the consumer with the identity and geographic address of the *trader*—rather than a digital key—would directly mitigate the above.

2. Right of withdrawal

The right of withdrawal provides consumers with "a period of 14 days to withdraw from a distance or off-premises contract, without giving any reason, and without incurring any costs."[127] The ex post nature of the right of withdrawal, however, demonstrates how both traditional and smart contracts would be affected in the same manner. The trader and consumer have already made the exchange, whether by traditional means or through the automated execution of a smart contract. In either instance, the consumer is similarly asking for payment to be returned for their goods. There is therefore no need to reform the right of withdrawal when contrasted with unfair contract terms, where the effect on consumers significantly differs between traditional and smart contracting consumers. Nonetheless, that is not to say that consumers should *lose* the right of withdrawal or the trader's information requirements simply by using a smart contract, as the Consumer Rights Directive's listed exceptions would suggest.[128] Reform is therefore required in this regard in order for consumers to be adequately protected.

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[123] *Id.* at 377.

[124] *See id.*, (finding that "[l]aw enforcement agencies have done just that, when pursuing proprietors of Bitcoin exchanges promoting illegal activity like drug trafficking").

[125] *Id.*

[126] *Id.* at 372.

[127] Consumer Rights Directive, art. 9(1).

[128] *See supra* p. 14.

C. Unfair Commercial Practices

The Unfair Commercial Practices Directive ("UCPD") focuses on "business-to-consumer commercial practices," laying out a framework to determine whether a trader's practices can be considered "unfair."[129] Should a practice be unfair, the trader may face criminal and administrative sanctions, and the consumer may be able to seek private redress against the trader.[130] The nature of smart contracting increases the need for protection from the various practices that the UCPD prohibits.

It is important to note that the UCPD's applicability to smart contracts does not present any of the concerns seen with the Consumer Rights Directive or the Unfair Contract Terms Directive. The UCPD is not limited to *contracts* between consumers and traders, but rather applies to "any act, omission, course of conduct or representation, commercial communication including advertising and marketing, by a trader, directly connected with the promotion, sale or supply of a product to consumers."[131] As the focus is not on contracts but *practices*, the UCPD's scope is broad and easily encompasses interactions between consumers and traders which may lead to a smart contract between the parties.[132]

1. Misleading commercial practices

There are two types of misleading practices: misleading actions and misleading omissions.[133] Due to the UCPD's focus on practices and not contracts, the prohibition on misleading practices can yield significant benefits in the smart contracting space. Moreover, the use of smart contracts can limit the occurrence of certain misleading practices altogether.

A practice which "deceives...the average consumer" or "contains false information and is therefore untruthful" is considered a misleading action[134] and is prohibited.[135] Smart contracts can limit certain

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[129] UCPD, art. 3(1).

[130] *See* The Consumer Protection (Amendment) Regulations § 3 (2014) (The recourse available to consumers largely depends on the member state's national legislation).

[131] UCPD, art. 2(d).

[132] *See id.* arts. 6(1) and (2); *id.* arts. 7(1) and (2); *and id.* art. 8. The UCPD often requires that the practice "causes or is likely to cause [the consumer] to take a transactional decision that he would not have taken otherwise," *id.* While a smart contract may be disputed to be a legal contract, it is unquestionably a transactional decision.

[133] *See id.* arts. 6 and 7.

[134] *Id.* art. 6.

[135] *Id.* art. 5(1).

instances of misleading actions. Under the European framework, providing false information on "the existence...of the product" is a misleading action.[136] However, smart contracts render the non-existence of a product unlikely because if the product is not delivered, then under the if-then sequence, the smart contract would not execute. Similarly, due to the if-then nature of smart contracts, to mislead the consumer on "the price or the manner in which the price is calculated"[137] is also unlikely since the consumer should have the ability to see the exact price-related consequence to every act.

The act of misleading the consumer as to "the nature, attributes and rights of the trader or his agent, such as his identity and assets, his qualifications, status, approval, affiliation or connection and ownership of industrial, commercial or intellectual property rights or his awards and distinctions"[138] is, however, even more important where smart contracts are concerned. As discussed above, the use of digital keys can create several issues for consumers, whether it be a consumer's ability to assess the trader's reputation or their ability to bring suit.[139] A trader's ability to operate under a digital key increases the ease in misleading the consumer as to the trader's identity or attributes. This misleading action is therefore a key component to protecting consumers, especially if the Consumer Rights Directive is held not to apply to smart contracts as consumers would no longer benefit from the trader's information requirements.

Actions which mislead consumers as to "the main characteristics of the product, such as its...benefits, risks, ...[and] fitness for purpose"[140] may also prove to be more important in the smart contracting space. Smart contracts present the appearance of being accurate and clearly communicated,[141] which could lead consumers to believe that their smart contract will uphold the qualitative aspects of their purchase better than the traditional contractual counterpart. However, smart contracts cannot, at this stage,[142] assess terms that "imply human

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[136] *See id.* art. 6(1)(a).
[137] *See id.* art. 6(1)(d).
[138] *See id.* art. 6(1)(f).
[139] *See supra* at 14-15.
[140] *See* UCPD, art. 6(1)(b).
[141] *See* Nzuva, *supra* note 38, at 71 (discussing the benefits of "accuracy" and "clear communication").
[142] The development of artificial intelligence may solve this issue in the future. *See, e.g.*, Marcin Borecki, *Making Smart Contracts Smarter: The Magic Combo of Blockchain & AI*, MEDIUM (Aug. 19, 2020), https://medium.com/swlh/making-smart-contracts-smarter-the-magic-combo-of-blockchain-ai-4859f66fbe3c.

judgment."[143] A smart contract could, for example, dictate that *if* the consumer is misled as to the product's benefits, *then* the trader has committed an unfair commercial practice. A smart contract alone could not, however, evaluate whether the "if" component of the statement has been met. Misleading actions in this regard are therefore increased in importance due to the consumer's false sense that their rights are being autonomously protected when they are in fact not.

Misleading omissions are seen where a trader "omits material information that the average consumer needs, according to the context, to take an informed transactional decision."[144] It is misleading to omit "the geographical address and the identity of the trader, such as his trading name and, where applicable, the geographical address and the identity of the trader."[145] This requirement similarly works to help mitigate the challenges consumers will face when dealing with a trader being represented by a digital key.[146]

Other misleading omissions are, however, challenging to view occurring in practice. Where "the price cannot reasonably be calculated in advance," the trader cannot omit "the manner in which the price is calculated."[147] In a smart contract, the manner in which price will be calculated will almost inevitably be provided. The nature of the if-then format would require a formulaic basis as to the calculation of price, which would provide the consumer with an explicit description of how the price will be mathematically calculated, even if the calculation will take place in the future. Omitting "the arrangements for payment, delivery, [and] performance"[148] is also unlikely since the smart contract would similarly require such in order to fulfil its obligations. As an example, *if* payment from the consumer is received, *then* the product will be delivered. For the smart contract to execute the agreement, it must know how to recognize the payment, as well as know *where* and *how* to deliver. In other words, the smart contract will not amount to a misleading omission. The occurrence of certain

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[143] Werbach & Cornell, *supra* note 11, at 365 (finding that a "machine has no precise way to assess whether a party used 'best efforts,' for example."); *see also* Roger Brownsword, *Regulatory Fitness: Fintech, Funny Money, and Smart Contracts*, 20 EUROPEAN BUS. ORG. L. REV. 5, 9-16 (2019) (finding that Oracles can be used in similar instances). Oracles are "the off-chain trusted third-party information provider," *id.* at 9. Oracles can, however, fail to properly execute their role. *See, e.g., id.* at 15-16.

[144] UCPD, art. 7(1).

[145] *Id.* art. 7(4)(b).

[146] *See supra* at 14–15.

[147] UCPD, art. 7(4)(c).

[148] *See id.* art. 7(4)(d).

misleading omissions is therefore limited due to the level of specificity required in smart contracts.

2. Aggressive commercial practices

The autonomous nature of smart contracts increases the need to protect consumers from aggressive commercial practices. The use of "harassment, coercion, including the use of physical force, or undue influence" all are exhibitive of an aggressive practice.[149] Consumers subject to aggressive practices may not only be forced to enter agreements which they would not have otherwise entered, but enter agreements which are particularly onerous on the consumer. In a smart contracting environment, the contract would then be automatically executed, leaving the consumer to suffer the consequences in the interim while seeking recourse ex post. Reform is therefore needed to protect the consumer.

Certain interpretations of what constitutes an unfair commercial practice could bring fatal consequences for smart contracts should they not be considered a legal contract. When determining whether an aggressive practice has taken place, "account shall be taken of...any threat to take any action that cannot legally be taken."[150] The threat of a smart contract's inevitable enforcement could plausibly be treated as a "threat to take any action." If smart contracts are not legal contracts, then they do not legally transfer property rights between the parties. Therefore, a threat to take another's property—through a smart contract's autonomous nature—could be seen as threatening a non-legal action. Under such a reading, smart contracts could be seen as aggressive commercial practices themselves.

3. The notion of the "average consumer"

Throughout the UCPD, there is the notion of the "average consumer" and the requirement that the practice cause the average consumer "to take a transactional decision that he would not have taken otherwise."[151] EU case law has found the average consumer to be "reasonably well informed and reasonably observant and circumspect."[152] However, due to the novel and potentially complex nature of smart contracts, there is the question as to whether the use of smart contracts

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[149] *Id.* art. 8.

[150] *Id.* art. 9(e).

[151] *See, e.g., id.* arts. 6(1) and (2); *id.* arts. 7(1) and (2); *and id.* art. 8.

[152] Case C-220/98, Estée Lauder Cosmetics GmbH & Co. OHG v. Lancaster Group GmbH, ¶ 30, 2000 E.C.R. I-117.

will alter how courts treat the notion of the average consumer in regard to smart contracting consumers.

Recently in *Teva Pharmaceutical Industries Ltd v European Union Intellectual Property Office*, the General Court "recalled that 'average consumer' cannot be understood as only the consumer who is part of the 'general public', but the consumer who is part of the public specifically targeted by the goods and services in question."[153] A smart contract would seemingly not qualify as a "good" or "service," it being instead the *manner* the agreement between the parties is executed. In such a sense, smart contracts would not narrow the targeted audience as the smart contract would be providing the same good or service as that of a traditional contract. If the audience under examination was therefore synonymous with that of the traditional contract, the potential ambiguities and confusions surrounding smart contracts could form a component to the actions the average consumer would take. The greater complexity of contracting on a blockchain could suggest that consumers are more vulnerable than when contracting under traditional means. In turn, the ability for unfair practices to be established would be increased as more vulnerable parties are being dealt with and can be more easily taken advantage of.

Conversely, one could instead focus on the action of "target[ing]" a part of the public.[154] Due to the specific features of smart contracts, the use of smart contracts by a trader could be seen as an intentional tool to target a specific portion of the public. Targeting members of the public could suggest two alternative conclusions. First, that the trader is targeting a vulnerable population, which would yield the same effects as above.[155] Second, the targeting population could instead be treated as *more* informed due to their interest in smart contracts. In *Teva Pharmaceutical*, the court finds that "the 'average consumer' may be a professional whose degree of specialisation is high, if the goods and services in questions are *aimed specifically at such a public*, even if it is conceivable that those goods and services are also, on occasion, purchased by uninformed consumers who are part of the general public."[156] One potential example of such a good could be seen with Non-Fungible Tokens (NFTs), which are unique digital assets

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[153] Case T-697/19, Teva Pharmaceutical Industries Ltd v European Union Intellectual Property Office, ECLI:EU:T:2020:329, ¶ 19 (Jul. 8, 2020).

[154] *Id.* (finding that "it should be recalled that 'average consumer' cannot be understood as only the consumer who is part of the 'general public', but the consumer who is part of the public specifically targeted by the goods and services in question.").

[155] *See* UCPD, art. 5(3).

[156] Case T-697/19, Teva Pharmaceutical Industries Ltd v European Union Intellectual Property Office, ECLI:EU:T:2020:329, ¶ 19 (Jul. 8, 2020).

"[p]owered by smart contracts on [a] blockchain."[157] Under the second conclusion, the ambiguities and complexities of smart contracts could therefore be disregarded as the targeted public would be held to a higher standard of being "reasonably well informed" due to their increased specialization and interest in smart contracts.

The path adopted by the court when defining the average consumer in terms of smart contracts will have a clear effect on consumers. Under the first path, consumers will be provided with greater protection under existing EU frameworks due to a greater perception of vulnerabilities. Under the latter, consumers will be granted greater freedom in the agreements they come to as they will be treated as more informed. Overall, the manner the court approaches misleading commercial practices, aggressive commercial practices, and the definition of the average consumer will actively alter the protections awarded to consumers in the smart contracting environment.

D. Defective and Non-Conforming Goods

EU consumer law further protects consumers from defective and non-conforming goods. The European framework differentiates goods which are 'defective' from goods which are 'non- conforming.' Moreover, liability also differs depending on whether one is considered a 'producer' compared to whether one is considered a 'seller.' These contrasts are crucial once smart contracts enter the picture. When considering the ex post nature of seeking recourse for defective and/or non-conforming goods, the after-the-fact recourse would appear to suggest that consumers are treated similarly no matter whether they are smart or traditional contracting. However, the provisions on *non-conforming* goods have the potential to be severely curtailed in a smart contracting environment, whereas the European framework on *defective* goods provides consumers with greater protections which are amplified when dealing with smart contracts.

Should a product be defective, then "[t]he *producer* shall be liable for damage caused by a defect in his product."[158] Non-conforming

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[157] *Non-fungible tokens (NFT)*, ETHEREUM.ORG (Nov. 16, 2021), https://ethereum.org/en/nft/.

[158] Council Directive 85/374/EEC of 25 July 1985 on the approximation of the laws, regulations and administrative provisions of the Member States concerning liability for defective products, art. 1, 1985 O.J. (L 210) 29 [hereinafter "Defective Products Directive"] (emphasis added).

goods, on the other hand, solely hold the "seller" liable,[159] which alters the recourse available to the consumer. The definition of a seller is narrower than that of a producer, a "seller" meaning "any natural or legal person who, *under a contract*, sells consumer goods in the course of his trade, business or profession."[160] Should a smart contract not be considered a legal contract, then the provisions on non-conforming goods do not apply as there would be no seller "under a contract."

A "producer" is defined more broadly as "the manufacturer of a finished product, the producer of any raw material or the manufacturer of a component part and any person who, by putting his name, trademark or other distinguishing feature on the product presents himself as its producer."[161] First, there is no limitation that the producer and consumer be bound by a contract. The relevant directive solely requires the "injured person...to prove the damage, the defect and the causal relationship between defect and damage."[162] Second, defective products allow consumers to seek recourse against more parties as "*any person who imports* into the Community a product for sale, hire, leasing or any form of distribution in the course of his business shall be deemed to be a producer...and shall be responsible as a producer."[163] This expansion of liability is crucial when considering the concerns surrounding a lack of identifiability of a party represented by a digital key. Consumers injured by a defective product can therefore bring suit against any party in the chain of producers, increasing their ease in finding *someone* to sue.

Defectiveness is seen where the product "does not provide the safety which a person is entitled to expect."[164] Conformity of goods is instead assessed in light of "the description given by the seller,"[165] the good's fitness for purpose,[166] and the good's "quality and performance."[167] Therefore, in order for smart contracting consumers to avail themselves of the protections provided for against defective goods, they will need to meet the higher standard of the product failing to provide the requisite safety, rather than the good solely not complying

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[159] Directive 1999/44/EC of the European Parliament and of the Council of 25 May 1999 on certain aspects of the sale of consumer goods and associated guarantees, art. 3(1), 1999 O.J. (L 171) 12 [hereinafter "Non-Conforming Goods Directive"].

[160] *Id.* art. 1(2)(c) (emphasis added).

[161] Defective Products Directive, art. 3(1).

[162] *Id.* art. 4.

[163] *Id.* art. 3(2) (emphasis added).

[164] *Id.* art. 6(1).

[165] Non-Conforming Goods Directive, art. 2(2)(a).

[166] *Id.* arts. 2(2)(b), (c).

[167] *Id.* art. 2(2)(d).

with its description, purpose, and quality. Nonetheless, should smart contracts be considered legal contracts, then smart contracting consumers will yield the non-conformity benefits as well. Where goods do not conform, "the consumer shall be entitled to have the goods brought into conformity free of charge by repair or replacement."[168] Moreover, the seller's liability lasts for "two years as from delivery of the goods."[169] There are therefore valuable benefits to be gained from satisfying the requirements on non-conformity, in addition to those on defective goods.

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Through analyzing four key areas of consumer protection within the EU, this Part has demonstrated that while there are shortcomings, the existing regime lays a solid foundation for protecting consumers. Even when faced with novel technological developments, the existing framework does provide consumers with recourse. By highlighting the various shortcomings, this Part has pointed to various spaces for reform. This Article's final Part evaluates how to approach smart contracts and reform going forward.

III. THE FUTURE OF EU CONSUMER LAW

The EU consumer law framework has provided a stable and protective regime for consumers. To continue doing so, the regime must be updated as times and technologies progress. The radical claims surrounding smart contracts and their potential capacity to be alternatives to the legal system may cause some to believe that a complete overhaul of the present framework is required, or that smart contracts must be prohibited altogether. This Article, however, demonstrates that the existing framework lays the necessary foundation for future reform and, furthermore, that EU consumer law has existing measures in place which will protect smart contacting consumers. Smart contracts can therefore be welcomed in an optimistic light. In this final Part, this Article lays out the available approaches for reform, advocating for a progressive rather than extreme response to smart contracts.

As the above discussion makes clear, the autonomous and self-enforcing features of smart contracts can yield problems for consumers. These problems are prevalent due to the ex post nature of seeking recourse after the contract is automatically carried out. An ex ante regulatory response is therefore required.[170] When approaching regulatory

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[168] *Id.* art. 3(2).

[169] *Id.* art. 5(1).

[170] *See, e.g.*, Raskin, *supra* note 8, at 327, laying out how one potential method to dealing with the immutability of smart contracts "could be a system in which the

intervention, there are two principal approaches which can be adopted. The first is to focus on "coherentism," which "seeks to promote consistency by clarifying concepts, removing inconsistency and filling gaps whilst remaining loyal to the existing regimes."[171] Key values for coherentists are "integrity and internal consistency."[172] When subject to new technologies, coherentists look to how technologies can "fit within existing legal categories []and...try hard to fit them in."[173] The second approach draws on "regulatory instrumentalism," which "seeks to achieve specific policy goals and is therefore less concerned with preserving the coherency of the existing law."[174] The focus for regulatory instrumentalists is "whether the law is instrumentally effective in serving specified regulatory purposes."[175] In other words, "whether [the law] *works*."[176]

In the literature, the two approaches are seen as *contrasts*—an either-or.[177] However, this Article argues that consumer law requires a hybrid approach. Consistency is key for providing consumers with a comprehensible and stable regime that they can apply and understand. Nonetheless, consumers must also be protected. Consumer law must *work* in protecting consumers and not simply maintain internal consistency. While it would certainly be a challenging task to choose one approach over the other, as each yields their own benefits, this Article demonstrates that both approaches can be reconciled where consumer law is concerned.

1. A purely coherentist approach

The key coherentist question where smart contracts are concerned is whether a smart contract is a legal contract.[178] When answering this question, coherentists are working to fit smart contracts into

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relevant jurisdiction creates a publicly available database and application programming interface (API) of relevant legal provisions. These would be provisions related to the terms of the contract. The smart contract would call these terms and would be able to update those provisions terms in accord with the jurisdiction's update of the database." Another ex ante requirement could be to leave a legal manner for code to be inserted later; *id.*, finding that "computer programs are regularly written with the option of inserting code later."

[171] Howells, *supra* note 76, at 148.

[172] Brownsword, *supra* note 143, at 11.

[173] *Id.* at 12.

[174] Howells, *supra* note 76, at 148.

[175] Brownsword, *supra* note 143, at 12.

[176] *Id.*

[177] *See id.* at 11-12.

[178] *See id.* at 14-15.

existing legal categories, either by firmly disputing their contractual nature or strongly advocating for such. Aspects of the smart contract are broken down, searching for "where we find the offer, the acceptance, and the consideration when all that we have is a coded instruction to transfer a specified value."[179] While this Article does not seek to answer this coherentist question, Part II of this Article has highlighted how it is nonetheless an important question as a number of consumer protection frameworks, at their base, require a contract between the parties at hand. The coherentist approach of analyzing whether smart contracts qualify for these preliminary regulatory requisites is therefore a warranted endeavor.

Adopting a pure coherentist approach can, however, have its shortcomings. Analysis can be over-complicated by falling into puzzle after puzzle.[180] Moreover, time can be lost in exploration where it is instead action which is needed. In terms of ecommerce agreements, rather than overfocus on coherentist questions, the regulatory-instrumentalist response was adopted, "the law declar[ing] that, in principle, on-line transactions should be treated as legally binding, that there should be an equivalence between the law for off-line transactions and the law for on-line transactions."[181] By "simply recommend[ing] that legislation that does the particular job should be introduced,"[182] the regulatory-instrumentalist approach was able to protect consumers in an area of technological development.

2. Strict regulatory instrumentalism

While a regulatory instrumentalist approach can have benefits in areas of rapid progression, the consumer context highlights why such an approach should not be adopted exclusively. Article 169 TFEU provides that "[i]n order to promote the interests of consumers and to ensure a high level of consumer protection, the Union shall contribute to protecting the health, safety and economic interests of consumers, as well as to promoting their right to information [and] education...in order to safeguard their interests."[183] Therefore, consumers must know *how* to safeguard their interests.

A regulatory instrumentalist approach "has no reservation about enacting new bespoke laws if this is an effective and efficient

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[179] *Id.* at 15.
[180] *See id.* at 15-16.
[181] *Id.* at 17-18.
[182] *Id.* at 17.
[183] Consolidated Version of the Treaty on the Functioning of the European Union art. 169(1), 2008 O.J. (C 115) 47.

response to a question raised by new transactional technologies."[184] When considering the complex nature of coding and transacting on a blockchain, there may certainly be bespoke laws which would effectively target the problems smart contracts can bring. However, if the bespoke laws do not resemble the existing consumer protection framework, consumer certainty will be sacrificed. As consumers are the "weaker party,"[185] it is crucial to ensure consumers are educated and confident about how to safeguard their interests, especially when subject to new and challenging technological environments.

Moreover, "as technology moves at speed, regulating for specific problems may produce solutions that soon become dated."[186] Equally, concern for abiding by core values and consumer protection frameworks can ensure regulators are not quickly adopting bespoke laws in areas where "regulators may lack the necessary expertise."[187] Part II has demonstrated that "consumer law principles are sufficiently flexible to be capable of being applied sensitively to meet the needs of the new digital environment,"[188] and therefore strict regulatory instrumentalism is not needed. It is through a combination of coherentism and regulatory instrumentalism where consumer benefits are seen.

3. The proposed approach

A blend between coherentism and regulatory instrumentalism is the ideal approach to protect consumers. Consistency in the consumer protection framework ensures consumers will be informed and confident when seeking recourse against larger commercial parties. Regulatory instrumentalism, in turn, ensures that consumers are benefitting from a legal regime that truly *protects* them rather than solely aligns internally. The question is therefore: how does one apply such an approach? This Article's proposed response largely mirrors the structure of this Article itself.

First, one must undergo the regulatory-instrumentalist task of "identify[ing] the potential benefits and risks of committing transactions (or parts of transactions) to a blockchain."[189] The process of identification helps lay out what key benefits should be preserved, as well

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[184] Brownsword, *supra* note 143, at 12.

[185] *See* Commission Notice, *Guidance on the interpretation and application of Council Directive 93/13/EEC of 5 April 1993 on unfair contract terms in consumer contracts*, 2019 O.J. (C 323) 4, 8-9.

[186] Howells, *supra* note 76, at 149.

[187] *Id.*

[188] *See id.*

[189] Brownsword, *supra* note 143, at 17.

as what risks should be mitigated. The second step is to then apply smart contracts to existing regulatory frameworks. This step draws on key coherentist values, seeking internal consistency and how the new technologies fit within pre-established regimes. Regulatory instrumentalism is also blended into this step, assessing where the present law *works* and where it does not. The application of smart contracts to the existing European consumer law framework can be seen in Part II.

The third and final step is reform, which similarly involves a blend between the two approaches. From step two, the key coherentist questions are drawn out, such as whether a smart contract is a legal contract. With an understanding of the benefits and risks of using smart contracts, as well as the shortcomings in the existing framework, a balanced reform can be sought out. As with ecommerce agreements, the regulatory-instrumentalist reform of declaring smart contracts to be legal contracts may be the ideal route for some of the problems.[190] Such would ensure that several consumer protections—notably the unfair contract term framework, the Consumer Rights Directive, and the framework surrounding non-conforming goods—all apply to consumers who transact with a trader by smart contracting. Understanding the place of smart contracts in the existing regime allows for a progressive approach, which helps "provide an island of certainty for consumers that gives them the confidence to engage in a dynamic consumer digital market."[191]

There will be instances where the existing framework is simply inadequate in responding to new innovations, bespoke legislation being required. However, this Article demonstrates that such is *not* the case concerning EU consumer protection law and the new technology of smart contracts. The existing EU consumer law regime provides a solid foundation for protecting consumers. While reforms are necessary to ensure an adequate response to the emerging practice of smart contracting, consistency and coherence can be upheld by amending the existing framework rather than resulting to radical change.

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[190] Such a regulatory-instrumentalist reform is beginning to gain traction in several US states. *See, e.g.*, H.B. 2417, 53rd Leg., 1st Reg. Sess. (Ariz. 2017) (concerning Arizona); S.B. 1662, 110th Gen. Assemb., Prior Sess. Legis. (Tenn. 2018) (concerning Tennessee); Bernadette Bulacan, *State Legislation Bolsters Case for Smart Contract Enforceability*, Icertis (Feb. 26, 2020), https://www.icertis.com/blog/state-legislation- bolsters-case-for-smart-contract-enforceability/ (concerning Illinois).

[191] *See* Howells, *supra* note 76, at 149 (discussing how "someone concerned with maintaining consumer protection would naturally be inclined towards coherentism").

CONCLUSION

Smart contracts are the birth of innovation and intelligence. They set out to solve certain problems when transacting and provide parties with unique benefits. While these benefits can present challenges for consumers, the existing EU consumer protection regime has a number of mechanisms which protect consumers, even when faced with evolving technologies. Therefore, not only can regulators approach smart contracts with optimism rather than concern, but regulators can seek progressive rather than radical reforms. The EU provides consumers with one of the most protective consumer law regimes—and will continue to do so as more consumers use smart contracts to transact.