



# Standard form contracts and a smart contract future

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**Abstract:** With a budding market of widespread smart contract implementation on the horizon, there is much conversation about how to regulate this new technology. Discourse on standard form contracts (SFCs) and how they have been adopted in a digital environment is useful toward predicting how smart contracts might be interpreted. This essay provides a critical review of the discourse surrounding digitised SFCs and applies it to issues in smart contract regulation. An exploration of the literature surrounding specific instances SFCs finds that it lacks a close examination of the textual and documentary aspects of SFCs, which are particularly important in a digital environment as a shift in medium prompts a different procedural process. Instead, common perspectives are either based on outdated notions of paper versions of these contracts or on ideologies of industry and business that do not sufficiently address the needs of consumers/users in the digital age. Most importantly, noting the failure of contract law to address the inequities of SFCs in this environment can help prevent them from being codified further with smart contracts.

**Keywords:** Standard form contracts, Terms of Service (TOS), Smart contracts

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## INTRODUCTION

... consumers will lose their right to meaningfully participate in the formation and

incorporation of meaningful provisions in consumer contracts. Over time, commercial institutions will gain complete control over this, and will, by implication, invert the value of contract over goods and services

Legal scholar Ronald C. Griffin, 1978

New institutions, and new ways to formalize the relationships that make up these institutions, are now made possible by the digital revolution. I call these new contracts ‘smart’, because they are far more functional than their inanimate paper-based ancestors.

Nick Szabo, 1996 (author of smart contract concept)

A common feature of commercial relationships, standard form contracts (SFCs) have been a product of organised trade in some fields such as marine shipping and banking for many centuries, and, more recently, in others such as mass production industries as a form of service contract between companies or for consumers (Sales, 1953; Burke, 2000). These documents, also referred to as ‘contracts of adhesion’, generally make use of regularised or commonly used clauses that are written by one party with the expectation of acceptance by the other, often without the latter actually reading the terms (Kessler, 1943). The reader’s reluctance to read remains consistent and perhaps even more problematic in a digital environment, where interface design choices such as discrete hyperlinks only emphasise and promote this tendency (Obar and Oeldorf-Hirsch, 2016).

One of the defining features of SFCs is that they are assumed to be exempt from negotiation based on their fixed clauses and facilitation of routine transactions (D’Agostino, 2015). Around the mid-twentieth century, the United States’ maturing capitalistic, free enterprise system prompted the widespread adoption of SFCs as a vital part of a “highly elastic legal institution” meant to protect a market for the trade of goods and services; SFCs became a tool, then, of “almost unlimited usefulness and pliability” for a diverse range of transaction types (Kessler, 1943). SFCs have many positives for industry: they encourage trade by increasing transactional efficiency and, as they are presented on a ‘take-it-or-leave-it’ basis, significantly decrease transaction costs (Hillman and Rachlinski, 2002; Patterson, 2010). Thus SFCs account for the vast majority of contracts and are an important part of the world’s economic landscape. It is estimated that consistently over the past several decades more than 99% of all contracts used in commercial and consumer transactions are SFCs (Griffin, 1978; Patterson, 2010).

Despite its use in highly efficient regularised systems, contract law generally has no complete descriptive or normative theory; instead, it is generally viewed as a remedial ‘institution’ whose function is to adjudicate any issues that arise between two individuals or entities after transactional activity (Griffin, 1978). Foundationally it rests on an idea called ‘freedom of contract,’ which promotes the facility of individuals to transact *without* the interference of oversight systems such as government institutions (Kessler, 1943). Broadly, then, contract law sees its goal as one of enabling the “power of self governing parties to further their shared objectives through contracting” (Eisenberg, 1994). Contract law is seen as embodying this tension between freedom of contract and the ability or need for sovereign or third party entities to intervene in their governance (Lonegrass, 2012). Politically, at their extreme ‘contract systems’ are in opposition to ‘status systems’: “A ‘status system’ establishes obligations and relationships by birth, whereas a ‘contract system’ presumes that the individuals are free and

equal” (D’Agostino, 2015). Libertarianism, for instance, views “freedom of contract as the expression of a ‘minimal state,’ in which people pursue their interests by themselves only.” SFCs are the fullest embodiment of this expression, in one sense, with “the ceremony necessary to vouch for the deliberate nature of a transaction” effectively “reduced to the absolute minimum” to oblige the business community (Kessler, 1943). Ultimately, then, the hierarchy of interests in business and industry most dominantly controls the nature of these transactions and businesses are the entities with this *freedom*, not consumers. This is especially true in many cases of SFCs, where there is an imbalance of power and asymmetric information between the parties (Mulcahy, 2008).

Looking ahead, newer implementations of digitised contracts such as smart contracts made with blockchain technology have yet to be considered within the purview of these previous issues with SFCs. With smart contracts, the goal of many blockchain technology supporters is to replace the need for centralised governance and third party institutions with “immutable, unstoppable, and irrefutable computer code” that instantiates the tamper-proof records, which are said to be able to ‘self-enforce’ (Szabo, 1996; Wall, 2016). Ideally, this concept could be a realisation of the “freedom of contract” concept with individuals being able to transact without the intervention by a third party institution, whether for facilitation or enforcement. Recently, however, many of the newer implementations integrate into these third party services in the form of private blockchains that provide more secure systems for companies, if not yet something revolutionary. One currently successful and potentially disruptive public blockchain that supports smart contract technology is the Ethereum blockchain<sup>1</sup>. So far smart contracts have been primarily used for simple transactions and verification purposes (e.g., basic financial wallets, notarisation, lotteries and games), but projects with a wide variety of functions, including futures, securities, insurance, Internet of Things service contracts, supply chain contracts, and mortgage and property transfer are already in experimental or developmental stages (Barlotetti and Pompianu, 2017).

Smart contracts’ use of a distributed ledger technology (DLT) such as a blockchain opens the door for these many types of complex transactions among companies and individuals. DLT makes use of a set of cryptographically linked transactional documents that are publically copied onto each node of a decentralised network (peer-to-peer), reducing the points of vulnerability so that no one centralised point exists. Theoretically, you would need to hack into the code of every computer on the network in order to disrupt the ledger (Frisby, 2016). Certain communities of supporters are idealistically promoting it as revolutionary, even as “the most consequential technology since the internet” (Varadarajan, 2017).

The decentralisation of this new technology seems at first to fulfill Manuel Castells’ (1996, 2007) “network society”, reimagining several social interactions and institutions as networks that depart from being organised around centres and hierarchies. While the decentralised DLT concept seems to align with this ideal, its actual implementation might mirror previous hierarchies of industry-based systems as it is being integrated into them. In some ways, DLT aligns more with another sociological theory, boyd’s (2008) concept of “networked publics” in which interaction in a networked space has more nuanced characteristics: it is persistent (or recorded), searchable, and has an undefined boundary for its audience, each of these with benefits and sacrifices for users. Since DLT technology leaves a copy on each computer node and is said to be an ‘unalterable’ record of a public ledger, it might be argued that previous contracts were more private and transient than these newer instantiations made with DLT. On the other hand, the use of cryptography used in smart contracts allows for a more anonymous yet secure record that while providing more accountability, also provides the traceability that has been

associated with consumer rights abuses (De Filippi and Wright, 2018). Additionally, the boundaries of a contract's audience depend most importantly on the institutions that interpret and enforce it, not just on who sees it or reads it. If the DLT behind a blockchain implementation allows for a legitimacy that somehow supersedes this institutional interpretation, then this audience could shift beneficially to the parties who write them or negatively to solely the machines that read, interpret, or store them. This spectrum could be useful in understanding some of the social effects of these future technologies, how they live up to ideals (or fail to do so), and what is at stake in their widespread use and regulation.

Significant effort has been exerted toward disassociating smart contracts from contracts in general (Werbach and Cornell, 2017); however, with these efforts to sidestep third party enforcement that would legitimate them as contracts comes a de-legitimacy more generally that would preclude them from many uses. If they are meant to replicate simple, automated transactions (i.e., Szabo's analogy to a vending machine), then perhaps they do not need to make use of previous theories of contracts. In popular discourse, however, with smart contract technology some are predicting an exchange of more complex SFCs where the "role of lawyers might shift to producing smart contract templates on a competitive market, [and] contract selling points would be their quality, how customisable they are, and their ease of use" (Cassano, 2014). On the contrary, De Filippi and Wright (2018) claim:

Just as we moved from an earlier era of expensive, highly tailored clothing toward mass-produced garments with limited personalization, with the growing adaptation of blockchain technology and other contract automation tools, we may witness a shift from expensive and bespoke contracts to low-cost and highly standardised legal agreements with limited avenues for customization.

Regardless, current discussions of smart contracts include uses such as triggering service payments over time, facilitating car or home rentals, controlling Internet of Things products, and defining labour terms, each of which seems to promote the idea that these 'automated transactions' will indeed want to be legitimated as *contracts*, perhaps just functioning by a different technical mechanism through automation and memorialisation on the blockchain. Not all smart contracts will be SFCs nor will all SFCs become automated and this essay does not attempt to solve this particular ontological issue; rather, it entertains the idea that there is a strong possibility of correlation between future smart contract implementations and SFCs and therefore the issues that are present in this previously unresolved discourse are applicable to future discussions of smart contract regulation.

Thus this essay is a critical review of the main aspects of the discourse surrounding SFCs as they exist in a digital environment, including some of the basic features of the legal reasoning, statutes, and ideologies that justify their use, with an eye toward a future application to smart contract technology. While it mainly covers the American legal landscape, and while contract law varies from state to state and district-to-district, the contract theories presented are widely applicable and did not originate in the United States. Differences between civil law and common law systems will be noted where appropriate, but this essay does not claim to provide a complete, comprehensive review<sup>2</sup>.

Some of the specific features of smart contracts such as their automation also contribute to this discussion. In looking for "secure" contracts (i.e., without bugs in the code), users may find themselves already utilising standardised smart contract terms (or algorithms) frequently. For

the smart contracts that utilise Ethereum's open source protocol and blockchain, certain code-based limitations have a standardising effect on their uses and even general form, for instance. As regularisation is seen as a positive for SFCs, many of these efforts might be interpreted as beneficial (i.e., the more standard a contract is, the more users can presume to know what is in it and a reluctance to read can be justified); however, precaution needs to be taken that the industry-serving principles and policies that currently serve SFCs at the expense of consumers are not exacerbated with the smart contracts that might take their place.

## BACKGROUND: LEGAL THEORY OF STANDARD FORM CONTRACTS (SFCs)

Modern SFCs take many forms, including those that facilitate multi-step supply chain transactions between businesses and others that lay out terms and conditions between companies and customers for a multitude of services. Legal discourse often distinguishes between two common forms of contracts: business-to-business (B2B) contracts and business-to-consumer (B2C) contracts, with the distinguishing factor being the amount of knowledge each of the parties possess. B2B contracts are generally between two companies that are considered to be two *sophisticated* parties, or two parties who have professional knowledge that increases their understanding of the substantive content of the contract and can negotiate or participate in the creation of the contract. B2B contracts are presumed to have been read. B2C contracts, on the other hand, are between individuals and companies where one party is a *naïve reader*, or a reader who is not presumed to understand the content, and the other is sophisticated. This essay is concerned chiefly with B2C contracts as these are the primary focus of concern when it comes to violating consumer rights. (Mulcahy, 2008; Lonegrass, 2012)

There are various ways to address the inequities of B2C standard form contracts - regulating the content of the contracts themselves, providing remedies in cases of unconscionability, and dictates of mandatory disclosure or more explicit assent (Ben-Shahar and Schneider, 2014). One aspect that spans all of these solutions and should be examined carefully is how previous digital SFCs were interpreted legally as textual entities. This means looking at how a user or reader might encounter a contract as part of a digital interface and how notions of genuine effort signal to courts a 'reasonable communicativeness' in these spaces. This might also mean looking at interpretations of procedural unconscionability with such factors as awareness, agreement, presentation, and meaningful choice. All of these aspects must not only be thought through for digital contracts, but also now for *automated* contracts with the invention of smart contract technology.

A body of legal scholarship exists in both civil and common law systems to address these issues. In the US for several decades, three devices have been used to rectify the legal shortcomings of SFCs: the Restatement (Second) of Contracts (Section 211), the Uniform Commercial Code (UCC) (Article II), and measures of unconscionability (Griffin, 1978; Moringiello and Reynolds, 2013). The first two remedies outline the basic features of contract formation and sales contracts through persuasive, authoritative legal scholarship (scholarship that is cited in many legal briefs and case law) (i.e., Restatement) or binding codes that require compliance (e.g., UCC). The third device, a determination of unconscionability, is less straightforward and relies on a study of two aspects of the contract that contribute to its complexity: the procedural component and the substantive component (Schwartz and Scott, 2003; Mann and Siebeneicher, 2008; D'Agostino, 2015). Unconscionability, in general, measures whether or not a contract is 'in good

conscience’<sup>3</sup>. The substantive component of an unconscionability determination considers the content of the clauses, the procedural component of an SFC looks at *how* clauses have been included into the contract and “cannot be determined by merely examining the face of a contract”. Instead, they must be considered in terms of “the circumstances under which the contract was executed, its purpose, and effects” (D’Agostino, 2015). This often includes the use of boilerplate language and format, the consumer’s awareness or ignorance of the existence of some clauses in the contract (usually called ‘unfair surprise’), and more generally the adhesive nature of the contract itself, which relies on processes of display, awareness, and agreement. Procedural and substantive unconscionability exist on a sliding scale where both must be shown for a case to have merit, but one can be more prominent than the other (Lonegrass, 2012).

Civil law systems tend to treat the issue with sovereigntist approaches such as in the EU and UK with the Unfair Terms in Consumer Contracts Directive of 1993 and then 1999, which were superseded by the Consumer Rights Act of 2015. These directives include a list of non-exhaustive terms courts will likely consider unfair in cases of ambiguity. A few of these terms address some of the procedural issues, such as one that states that terms must be in “plain intelligible language” and that drafters must “provide copies of standard contracts” as well as “information about their use” as well as not allowing a contract to be amended or modified unilaterally without sufficient reason. Most specifically, under this directive, terms in contracts cannot be “irrevocably binding [to] the consumer” if they “had no real opportunity of becoming acquainted [with them] before the conclusion of the contract”. These directives are worthwhile, but still ambiguous in a digital setting where these contracts are ubiquitous. In the US more recently, similar standards were enacted, such as the 2017 Bureau of Consumer Financial Protection’s regulation that prohibits the use of mandatory arbitration in financial service contracts - as they tend to prevent class action lawsuits for consumers. These efforts might be viewed as attempts to solve some of the issues that are uniquely present for SFCs in a digital environment and for procedural unconscionability - awareness, agreement, and understanding that all contribute to a ‘meeting of the minds’ amongst contractual parties.

According to traditional contract law, the steps of “offer”, “acceptance”, and “consideration” are required as the fundamental criteria for a contract to be deemed received and accepted.<sup>4</sup> Ideally, this would manifest as a transaction that is a “meeting of the minds”, which includes user awareness (offer) and an understanding (acceptance) of the resigning of something of value (consideration) (Yovel, 2000; Moringiello and Reynolds, 2007). In terms of procedure, other factors of the context of the contract come into these discussions as well, including the mental capacity and competency of the parties of a contract (e.g., sophisticated or naïve readers) and the contract’s “legal form”, which takes into account that some contracts “have a specific form or [are] drawn in a certain way” (D’Agostino, 2015). This last factor is especially important to standardised contracts that rely on simplified procedural processes to retain their validity. In theory, these discussions of the form and conscionability of SFCs would result in explicitly allowing both parties the opportunity to study the agreement, or at least to accept or decline its terms with an understanding of its implications. However, since the primary value attached to SFCs is their role in economic efficiency, substantive changes are infrequent and only happen with large class action litigation. Instead, more commonly due to forum selection clauses, which dictate the terms of the legal setting for remedial action, mandatory arbitration prompts a “private conversation” between drafters and courts (Horton, 2009), and most of the law in this area focuses on procedural issues.<sup>5</sup> Thus while electronic procedures of SFCs have served to promote further efficiency of industry through their digital state (Hillman and Rachlinski, 2002; Moringiello and Reynolds, 2007), it is possible that the affordances provided procedurally sacrifice consumer rights and increase the tendency toward unconscionability that was already

suspected by some legal scholars prior to their widespread digitisation (Hillman, 2006).

Some of the topics at stake in this debate are accessibility and notification requirements, or regulations that force drafters (i.e., those writing the contract) to make a copy accessible to the adherent (i.e., the other party, non-writer of the contract) and provide notice of its existence and any modifications (Preston and McCann, 2011). Laws such as the Uniform Electronic Transaction Act (UETA) that were intended to streamline the process of digital transactions, however, subverted this debate and exacerbated the issues in some of the arguments for the unconscionability of SFCs. Put simply, with the UETA, “there is effectively no legal impetus for any company to retain evidence of these contracts and signatures,” whereas previously, companies were required to provide and retain copies of their contracts with their customers (Randolph, 2001). It has been argued that with this statute, consumer rights were sacrificed for the greater good of the economy. This could be seen as promoting the notion that, since SFCs are associated with an inequality of bargaining power, it is much more likely that they will be “used as instruments of economic oppression because their terms can more easily be weighted in [favour] of the interests of the stronger parties who prepare them”(Mulcahy, 2008).

## **DIGITAL CONTRACTS, VISUALISATION, AND ELECTRONIC AGREEMENTS**

In a digital environment, standard form contracts have taken on several forms for both B2B and B2C transactions. A spectrum exists in regard to how contracts are rendered digitally and how they function in a networked environment. For instance, it is now popular for some B2C contracts to make use of visualisation software that produces rent agreements or car lease agreements<sup>6</sup>. Even as one party is sophisticated and the other naïve, visualisation software applications in these situations have proven to increase comprehension among naïve readers (Barton et al., 2013; Passera et al., 2016). One study (Barton et al., 2013) performed on this topic found that “visualizations could provide a personal touch to an otherwise sterile-looking contract document, and diminish the ‘otherness’ of legal terms,” and further, visual aids “decreased the ambiguity of information, so that it would be easier to understand alternatives [and] converge on a shared interpretation.” In these cases, the sophisticated party who is drafting the contract is speaking to the naïve party with the intention of communicating at least some of the information of the contract.

With other types of agreements, however, such as terms of service (ToS) agreements used by most website platforms to lay out the terms of acceptable use, data collection, ownership, and privacy policies, the intention is to de-emphasise the presence of the contract. ToS agreements are generally found as a hyperlink in the footer of the page or as a step to which consumers must agree during a registration process and typically provide only the necessary information for courts to interpret their effort of communication. Nancy Kim (2013) argues that unconscionability is a toothless mechanism to address the issues with these agreements, stating that procedural unconscionability is only viewed by courts as a threshold requirement - as long as “there was notice and an opportunity to read the terms”- and not as a way to further communication efforts for actual users/consumers. Furthering the issues, Kim argues, when courts do consider the substance of these contracts, they tend to rely too heavily on industry norms and thus on the agendas of those with more power and information.

Although it is only an example of one genre of SFC, how legal statutes have been applied to ToS

agreements are foundational in determining how future SFCs, like smart contracts, might be interpreted since they are some of the most egregious offenders of consumer rights (Venturini et al., 2016). As it is within the digital environment that ToS agreements have retreated from paper evidence of transaction terms to hidden hyperlinks in the margins, allowing in some cases for agreement to take the form of browsing, notions of awareness need to be re-thought. And as the text behind the hyperlink can change at any time (citing the oft-used “unilateral modification” clause), often without notice, this environment calls into question what awareness actually means, if anything (Moringiello and Reynolds, 2007). Preston and McCann (2011) acknowledge the new “truly unruly ToS”, referring to this new genre of contract as “a beast untied from the contexts in which form contracts gained (limited) legitimacy” and akin to judicial opinion adopting a “wild horse while forgetting that such beasts were only originally allowed into civilized communities because they were in a corral.” Put another way, the inherent physical restrictions on paper contracts that accommodated some of their inherent inequalities, such as the requirement to retain a copy of the agreement and provide it to the adherent, have been removed in the digital environment (Randolph, 2001). One set of influential laws that contributed to the current situation is the UETA and E-Sign laws, which were enacted in the early 2000s by the Clinton administration to regularise interstate commerce practices and validate electronic signatures. These laws were vital to legalising digital SFCs, including ToS agreements, in their current form.

The UETA, which stemmed from a large legal undertaking meant to streamline the recordkeeping practices of business transactions across state lines, provided affordances to digital contracts, such as ToS agreements, and contributed to the codification of their inequities. By allowing commercial interests not to have to keep paper copies of their electronic documents as evidence of transactions, the UETA effectively gave legally binding status to electronic documents and signatures without requiring a paper component (Section 7 (c)). Relevant sections of the UETA include Section 7, which is comprised of four parts that “summarily give(s) legal recognition to electronic signatures, records and contracts,” include determining that “a record or signature may not be denied legal effect or enforceability solely because it is in electronic form” and “a contract may not be denied legal effect or enforceability solely because an electronic record was used in its formation” (Section 7 (a) and (b)). These criteria vastly expanded the idea of a contract to allow digital records to exist as valid legal documents, allowing for looser rules in regard to archiving the various copies of a document than were previously imposed on businesses for each transaction.

The E-Sign laws made a few departures from the UETA, and broadened the notions of agreement and awareness even further. The E-Sign laws stated that: “The mere fact of use, or of behavior consistent with acceptance, by a party should be sufficient to evidence that party's willingness and to make applicable E-SIGN's base rule.” For ToS agreements, this was interpreted to mean that just engaging in the digital space could be affirmation of agreement (Wittie and Winn, 2001). Called ‘browsewrap’ agreements<sup>7</sup> (as opposed to ‘clickwrap’ agreements), users do not need to explicitly agree to these hyperlinks in the margins to be held liable for their contents. Simply using a website is enough to provide contractual obligation. While over time clickwrap agreements have proven more often to be valid in legal opinion, provisions like the UETA and E-Sign laws ultimately allowed for the unwieldy and incomprehensible legalese of these contracts to hold power over regular users’ personal data and activities, even as many consumers are not aware of their contents or that they even exist.

Research on ToS agreements has been primarily in the legal sphere and within legal discourse. Many scholars have claimed that these agreements are unconscionable in general or in part, or

have claimed that they are not really contracts at all. While notions of tacit agreement have been used in several cases to uphold ToS agreements, such as in the case of browsewrap agreements, others have argued (Radin, 2013; Ben-Shahar, 2014) that these contracts, as one-sided, boilerplate text hidden in inconspicuous hyperlinks, are one of the many variations of contemporary contracts that do not actually fulfill the ‘contract’ criteria, and therefore should not be subject to legal contract theory. According to legal scholar Margaret Radin (2013), besides being completely non-negotiable, issues of consent and user awareness have become too complicated to allow these documents to be defined as being between two parties that: 1) are aware of the agreement to which they are promising to adhere (including a general sense of its terms), and 2) are aware of the exchange taking place as laid out by the terms of the agreement. She states: “‘Agreement’ has become a talismanic word merely indicating that the [drafter] deploying the boilerplate wants the recipient to be bound.” In other words, ‘agreement’ to and comprehension of the nature of the ToS contract are central to its definition and enforceability as a contract, yet since this document has taken on a digital form, these aspects of it have been obscured, and therefore cannot be considered to possess the necessary characteristics to be deemed valid. Omri Ben-Shahar (2014), contract law professor from the University of Chicago Law School, best represents this opinion:

Because boilerplates do not represent informed consent, because they are divorced from our intuitive understanding of agreement, and because they divest people of their democratically enacted entitlements, they degrade the institution of contract that is justified by its respect for individual autonomy and private control. Therefore, boilerplates should be powerless to govern people's rights.

While Radin and Shahar represent the most extreme opinion on the topic, analysis is needed to produce a more nuanced portrayal describing how a combination of developing perceptions of users and a dominant ideology that favours consumerism contributed to the policies and legal precedent that preceded the current form of digitised SFCs. These documents are often not viewed as contracts by the people most affected by their contract status with the consequent effects on user rights being masked by their placement within an information system such as an interface or registration process.

Ironically, often legal judgments on SFCs rely on reasoning that compares them to previous physical or paper versions. Judge Kimba Wood, for instance, in a ‘clickwrap’ case (*Bar-Ayal v. Time Warner*, 2006) noted that even though a user had to scroll through thirty ‘screens’ of the ToS agreement to find the clause at issue, it was still upheld as legal due to Wood’s argument that “it is not significantly more arduous to scroll down to read an agreement on a computer screen than to turn the pages of a printed agreement” (Moringiello and Reynolds, 2007). Printed, the agreement would have been eight pages, which leaves open the question: is it easier or different to scroll through thirty screens than to flip through eight pages? How does a pop-up window in a sign up process on a website change the process of reading or comprehension by providing different types of situational frames or markers of authenticity for users? Rather than relying on these markers, the circumstances and literacies of readers/adherents should be part of the measurements of efforts of communication.

In a study of the user agreement that came with his new iPhone, for instance, type and print professor Brian Lawler (California State Polytechnical University) analysed the documentation and formatting practices of the agreement that signify the authentic appearance of a contract. He notes how the 32-page pamphlet had margins of only about one-eighth of an inch [*about 3*

*mm - Ed.*], which causes the page to read “like a big gray mass [...] with hardly any whitespace” (Sullivan, 2012). With the characters' height at only 4.5 points, “a smidge taller than the thickness of a single dime,” Lawler states that we are dealing with some “seriously small” font as well as “painfully tight” spacing between the lines of the text at only “just past the minimum legible standard before the descenders (the bottoms of the *j*'s and *p*'s, for instance) in one line of text start to overlap with the ascenders (the tops of the *h*'s and *f*'s) in the next line.” And none of this is by accident - Lawler explains how “the world's best typesetters work on these documents, and most fine-print producers review the whole design with legal teams”. Because the ‘freedom of contract principle does not preclude any specific contract format, the “legal form” required of SFCs is determined by courts as gestures of “genuine effort” by drafters that simply recycle conventions of SFCs that are ineffective, even having the opposite effect of communicativeness (Sullivan, 2012). One way to address these issues is through mandatory disclosure efforts, yet these have also widely been found to fail to reach consumers (Ben-Shahar and Schneider, 2014). For instance, clickwrap agreement, which requires a specific button to push, only was found to increase reading by 0.36% over browsewrap (Marotta-Wurgler qtd. in Schwartz, 2015). Rather than disclose the content of an unreadable agreement or have consumers agree blindly, perhaps the solution is in standardising and regulating the procedural and substantive elements of these agreements in ways that are effective and not merely convention.

Increasingly, with these decisions the stakes are high. While privacy and data collection are the main concerns associated with ToS, there are not very many studies on the direct effects of the digitisation of SFC agreements. One major study, however, undertaken in 2016 by a partnership between the Dynamic Coalition on Platform Responsibility (DCPR) and the United Nations' Internet Governance Forum found that these agreements affect human rights significantly in the areas of freedom of speech, privacy, and due process, particularly for marginalised and low-income communities (Ventuini et al., 2016). Another study proved what we already assumed - that ToS agreements are not read by the majority of users. Obar and Oeldorf-Hirsch (2016) tested 543 participants to see if they read and understood the ToS of a fictional website and empirically concluded that the “vast majority of participants completely missed a variety of potentially dangerous and life-changing clauses”. While this unfamiliarity of the majority of consumers might pass under a SFC legal concept known as the “informed minority” hypothesis that claims “regulation is effective if it at least increases the proportion of informed consumers to a critical mass able to influence sellers' decisions” (D'Agostino, 2015), the exact proportion needed to make a difference is difficult to determine. While few, these studies, when viewed adjacently, signal a dangerous intersection of a SFC process that hides its existence and the consequent implications of this inconspicuousness for vulnerable communities and the wider public.

## CONCLUSION: APPLICATIONS TO SMART CONTRACTS

Smart contracts represent the synthesis of two lines of technological development - electronic contracting and cryptography - and yet this fusion is complicated: “Viewed in one way, smart contracts represent merely the latest step in the evolution of electronic agreements. From another perspective, smart contracts' use of blockchain technology distinguishes them from any antecedents” (Werbach and Cornell, 2017). In other words, smart contracts in some sense, are merely an extension of electronic data interchange (EDI) formats used in many B2B and B2C contracts (Szabo, 1996; Werbach and Cornell, 2017). Yet, under new laws, such as the Nevada Senate Bill (No. 398) that drew on statutes like the UETA, they are being defined as legitimate,

binding self-contained documents, claiming they produce “an electronic record created by the use of a decentralised method by multiple parties to verify and store a digital record of transactions which is secured by the use of a cryptographic hash of previous transaction information.” Nevada’s recent bill similarly more liberally allots agreement mechanisms for this technology as well. It states: “A smart contract, record or signature may not be denied legal effect or enforceability solely because a blockchain was used to create, store or verify the smart contract, record or signature.” While the intention behind this decision could help with streamlining smart contract transactions for industry in the same way that it did for other types of transactions, the implications may be similar to how the definition of agreement changed radically with ToS and browsewrap interpretations. For instance, commitment to the blockchain, which theoretically only requires action by the drafter, can now stand in for agreements. It already seems that smart contracts, although initially disassociated with their contract predecessors, are still being provided the same affordances and power as legal contracts (De Filippi and Wright, 2018) and should be monitored as such so that the same types of inequities are not codified into this new technology .

An exploration of the literature surrounding specific instances SFCs found that it lacks a close examination of the *textual* and *documentary* aspects of SFCs, which are particularly important when applying these principles and policies to future technologies such as smart contracts. Instead, common perspectives are either based on outdated notions from paper versions of these contracts or on ideologies of industry and business that do not sufficiently address the needs of consumers/users in the digital age. Perhaps a more nuanced and critical look at the ‘desirable’ characteristics that a digital, networked environment can support is the more appropriate query moving forward. boyd (2008) offers persistence, searchability, and a limited audience as some of the qualities of a networked public--perhaps parsing through which of these aspects a blockchain-supported smart contract system can enhance or distort is a worthwhile endeavour. Questions arise such as: how much permanence of the DLT record is needed for transparency’s sake and how should it be balanced with a need for privacy and limited audience? What aspects of contracts should be searchable and how would a comparison or organisation or documentation system of standardised smart contracts be beneficial to users uninitiated with their content? How might a digital interface in a smart contract situation distort the textual elements of a contract that were needed previously (or distorted by previous forms of SFCs such as ToS)? How might the automatic execution of a smart contract exacerbate issues of awareness and comprehension, and how do laws like the UETA’s determination contribute to this issue?

One location to start this work might be in the early efforts to standardise the protocols currently being formalised and the languages and terminology associated with smart contracts. For a smart contract to work on the Ethereum blockchain, it often adheres to the ERC-20 token contract protocol to function properly. ERC-20 is one of the most popular protocols to provide tokens with a common set of features and interfaces they can use to perform transactions such as sending currency and verifying account amounts or other information (McDonald, 2017; S. Palladino, personal communication, 12 December 2017). As ERC-20 provides the location by which many users interact with the contract, it is an appropriate place to start applying some of the knowledge from the discourse on procedural unconscionability that deals with users awareness, acceptance, meaningful choice, and understanding of the contract as a document. It is a community-created standard managed and formalised on *github*’s forum and repository, yet currently mostly only those from a computer science perspective are contributing to its development. Related efforts in terms of formalising and standardising smart contracts include efforts to translate natural language contract terms into the most common smart contract language, Solidity<sup>10</sup> and the International Standards Organization (ISO) TC/037 Study Group’s

work to standardise the associated terminology. As these mature, it would be worth incorporating interdisciplinary concepts (e.g., from contract law, finance, recordkeeping, *and* computer science), with perhaps a determination of the enforcement mechanism that is needed based on spectrums of identification of genre, functionality, or specific terms (see Kim, 2013; Lemieux, 2016; Raskin, 2017). It is yet to be seen whether the code restrictions and standardisation of protocols will have a positive effect on making smart contracts more predictable for consumers or whether it will make worse some of the issues of invisibility that plagued previous SFCs. With the ubiquitousness of SFCs, the goal is to prevent a situation where nearly every written transaction is a smart contract that exists behind-the-scenes, unreadable by most even if approached, and automatically executed and enforced by its technological mechanism rather than by an understanding of the reader or “meeting of the minds”. And perhaps it must be conceded that smart contracts and the companies that will produce them might not be able to self-regulate to the level necessary to prevent the abuses SFCs have been known to enact.

In addition to globalisation and scientific progress, Castells (1996) underscores the transition to a network society with an additional dimension: a new technological paradigm that includes the electronic hypertext, which has become a “new frame of reference for symbolic processing,” producing a state of ‘real virtuality’ that has become the “fundamental component of our symbolic environment” and “backbone of a new culture”. Castells notes how this space will be without physical boundaries-- timeless and placeless. boyd (2008) similarly notes, albeit less optimistically, how the networked public consists of “all people across all space and all time”. It is within this boundless, symbolic, hypertextual space, it seems, that SFCs flourish - as documents within documents (called “linked contracts”), as files and templates utilised and organised by records management systems, and as protocols that execute terms of a contract (smart contracts). With ToS, one platform can reach large numbers of users and engage them in a contract simultaneously with a hyperlink. With unilateral modification clauses, that same platform can also change the terms of this contract for all users at once. A collapsing of time and place does not always have a democratic or decentralised result with democratised power relations, and the legal reasoning that relies on these contracts as ‘standard’ only aids in this process (i.e., allows them to be hidden, ignored, invisible). So as not to fall into this same rhetoric that would displace smart contracts’ textuality while still providing the same legitimacy as previous contracts, discourse surrounding digitised SFCs and the issues that are still being resolved in this discourse are beneficial to consider.

In 1978, legal scholar Ronald C. Griffin wrote: “We are faced with an historic choice in contracts. We can lump together standard forms and classic contracts, or we can treat the former differently.” In the decades since, it seems standardised contracts have been “lumped together”, not only with other types of contracts, but also with new technological forms of these documents. Contract law changed very little from the First Restatement of Contracts in 1932 to the early 2000s, due to no “disruptive” technological developments in this field during these years (Moringiello and Reynolds, 2013)<sup>11</sup>. And legal discourse since has either relied on conceptions of past forms of contracts to validate digital versions or changed the very nature of some aspects of these contracts to accommodate industry with laws like the UETA. This does a disservice to consumers who need a stable, clear understanding of these contracts to inform the ‘reasonable expectations’ they are meant to rely on when expected not to have read the terms. Even at that early stage in the late 1970s, Griffin understood “the rules of the quiet past are simply too cumbersome to deal with the complexities of a stormy contract future.” We have already reached that future, and it is indeed stormy. But with the streamlining of digital processes that increase the efficiency of SFCs for business, communication efforts to increase

awareness of the terms for consumers could also be streamlined in a digital environment.

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## FOOTNOTES

1. According to Etherscan (the Ethereum Blockchain Explorer), it has already processed over 4.3 million blocks of transactions, with hundreds of thousands being continually processed each day, and thus is the most widely available and accessible implementation of smart contracts at this point in time. As of the beginning October 2017, for instance, it had an estimated market capitalisation of US \$28 billion and has recently been adopted by Microsoft, Intel, and more than two dozen major banks and has been at the centre of discussions for several national and international government institutions and the entire worldwide financial industry.

2. There has been discussion around the relationship of SFCs to consent and data collection, for instance, that are not covered here and that are extremely relevant due to recent revelations like Cambridge Analytica and facebook.

3. § 208 Unconscionable Contract or Term, Restatement (Second) of Contracts, 2017

4. § 1 Contract Defined, Restatement (Second) of Contracts, 2017

5. In a 2006-2007 survey of electronic contracts, Moringiello and Reynolds (2007) state: "Without putative class actions and arbitration/forum selection clauses there would be little law in this area."

6. See the services and research by Helena Haapio and Lexpert, for instance: Haapio, H. (2013, May 15). *Visual Law: What Lawyers Need To Learn From Information Designers*. *Legal Information Institute*.

7. Browsewrap agreements are digital contracts that commonly exist in the margins of interfaces and to which the adhering party agrees based on browsing the website, not by explicit agreement such as clicking an "I Agree" button (called clickwrap) (Kim, 2013).

8. Szabo (1996) cites the field of Electronic Data Interchange (EDI), in which "elements of traditional business transactions (invoices, receipts, etc.) are exchanged electronically," as one of the "primitive forerunners" to smart contract technology.

9. Exact wording: "If a law requires a signature, submission of a blockchain which electronically contains the signature or verifies the intent of a person to provide the signature satisfies the

law.”

**10.** See the *Logic Based Production System* by Imperial College London that produces “smart contracts written in quasi-natural language [and] executed through simulated human reasoning.”

**11.** It has been argued, for instance, that a “student who could pass a contracts exam in 1932 could also pass the exam in 2000” (Moringiello and Reynolds, 2013).