

IS A TRUSTLESS SYSTEM AN ETHICAL SYSTEM?

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ABSTRACT

If you have not been hiding under a rock you have heard the whispers about Bitcoin and Blockchain, and they are going to revolutionize everything we do (or scam everyone into debt at the very least). One very interesting part of this technology is the idea of Smart Contracts – programs that automate the process of an agreement between two entities essentially to circumvent aspects traditional problems with executing and enforcing said contract. While in the legal community Smart Contracts have been talked about at length about whether they can truly succeed in replacing certain functions of the legal system, one question that has yet to be asked is if they are a viable substitute are many people immediately placed in a detrimental or even harmful situation. The pervasiveness of Blockchain and Smart Contracts will not affect everyone in our society equally and that must be taken into consideration.

TABLE OF CONTENTS

I.	INTRO-BLOCKCHAIN AND SMART CONTRACTS	5
II.	CONSUMER POWER?	6
III.	A SOCIETY UNAWARE	7
IV.	CONCLUSION	9

I. INTRO-BLOCKCHAIN AND SMART CONTRACTS

Technology has always been a driving force in our society simultaneously enriching our lives while adding a steep level of complexity to many aspects of our lives. While this trend has always been a steady constant there have been tipping points that have marked turning points in the growth of our technology. The Industrial Revolution, the Internet, and now there is the potential for another technology to have a substantial effect on our lives once again – Blockchain. Blockchain is short is a decentralized ledger that records information on a chain of blocks that are constantly growing and immutable – unable to be changed.¹ One way to think about a Blockchain is to imagine you are building a group of libraries. Each day you create a new section of books to be added to one of your libraries. Some days by author and others by content, but at the end of each day a “block” of records is created with whatever new books you have brought into the library that day. That block contains all the information about the books that were brought in that day from the time they brought in to the author that wrote them. After each day these blocks “chain” together chronologically, making a running record of “book blocks” that cannot be changed. When you bring in new books or take old books out the record of books in the past blocks remain the same, but the changes are recorded in the new block on the day the changes were made. All of these additions and changes are reflected in every single one of your libraries at the same time once they are “validated” by operators, miners in real life, within that particular Blockchain. There is a lot I am leaving out of this example, but the main thing to grasp is the immutability and the decentralized nature of the network. Blockchain has the potential to move our society forward in many positive directions just as its predecessors. Efficient transactions, automation of agreements, and visibility of records across a network speak to just a few of the benefits that Blockchain is improving upon processes currently present. In the same vain as its predecessors Blockchain is bringing to mind different issues that will not only effect the business field but the legal industry.

Large Businesses are starting to see the commercial viability of Blockchain and are testing its capabilities for future use.² What is important to note here is that everyday people and consumers will more likely than not get their first taste of Blockchain from the enterprise level.³ Enterprise level technology will have clear benefits for business operations with the legal field nicely creating regulation around the adaptation of Blockchain technology, but

¹ Ameer Rosic, *What is Blockchain Technology?*, Blockgeeks (Apr. 04, 2018, 11:13 AM), <https://blockgeeks.com/guides/what-is-blockchain-technology/>.

² Bloomberg, *Blockchain is Pumping New Life into Old School Companies like IBM and Visa*, Fortune (Apr. 04, 2018, 11:17 AM), <http://fortune.com/2017/12/26/blockchain-tech-companies-ibm/>.

³ Hyperledger, *What is Hyperledger? Brian Behlendorf Executive Director Of The Hyperledger Project Explains*, The Linux Foundation Projects (Apr. 04, 2018, 11:17 AM), <https://www.hyperledger.org/news/2017/10/02/10-2-17-cryptocoinnews-what-is-hyperledger-brian-behlendorf-executive-director-of-the-hyperledger-project-explains>.

that it is not clear that this will occur in the same way with individuals and consumers affected by these business field improvements. One of these unclear advances are the improvement of Smart Contracts, which are automated agreements that can be enforced either by a court or some execution of computer code.⁴ The ability to enforce an agreement beyond the court creates an interesting dynamic between the two parties stated within the agreement.

In this paper one will be focusing on Blockchain in general while also narrowing in on Smart Contracts developments of Blockchain that have could have the biggest implications on the legal field. Smart Contracts have been amplified in their use by Blockchain because they can now be deployed in many different technologies given the decentralized nature of the Blockchain, mainly taking advantage of the cryptographic security insured by the Blockchain.⁵ Blockchain technology will oddly enough place consumers and everyday people in a type of a paradox where they have more access from a trustless democratized system while the complexity of that same system can be used to the advantage of those who better understand it and have set up the system more for the benefit of those entities. In technology one must always consider the residual impacts of advances on different demographics, much like one uses Race and Class to define sections of society that are negatively impacted by certain policies within the law. Contracts as a field of law already covers these inequities and it is interesting to see how Smart Contracts will affect vulnerable groups. Notwithstanding the hype around Crypto Currencies Blockchain is here to stay and the sooner we can identify possible problems the better the legal field can pivot to properly cover them to protect people.

II. CONSUMER POWER?

When I dove head first into Blockchain and Smart Contracts the first thing that really excited me was the idea of a decentralized system that put everyone on the same playing field as user of the system. Unfortunately, I was reminded that power and control resides in who designs the system that even a system like this can be used to distort that equal balance of power. Blockchain by its nature is meant to deter this, but is it still possible to alter this foundational aspect of Blockchain if a company wanted?

The main application that people see Blockchain in currently is through the Crypto Currency and the investment potential of using these tokens as assets, SEC does not currently treat them as securities in most circumstances.⁶ Although these are financial Blockchains

⁴ C.D. Clack, V.A Bakshi & L. Braine, *Smart Contract Templates: foundations, design landscape, and research directions*, ArXiv e-prints (Apr. 04, 2018, 11:24 AM), <https://arxiv.org/abs/1608.00771>.

⁵ Reggie O'Shields, *Smart Contracts: Legal Agreements for the Blockchain*, 21, BANKING INSTITUTE JOURNAL, 177 (2017).

⁶ Jay Clayton, *SEC Statement on Cryptocurrencies and Initial Coin Offerings*, U.S. Securities and Exchange Commission (Apr. 04, 2018, 11:33 AM), <https://www.sec.gov/news/public-statement/statement-clayton-2017-12-11>.

focused on shares of tokens in an Initial Coin Offering one can see the different economic aspects at play when negotiating for a plan as we did before. Here for example, we can return to healthcare plans for individuals with the different healthcare providers. In many ways this could be an improvement to the current system since it is allowing consumers to automate the manner in which they are receiving healthcare (such as their plans being updated as their change in conditions are recorded by their doctors). Looking at the system itself the healthcare providers would at the least have a say in how most of the Blockchain is designed if not practically design it themselves to favor the companies. A dynamic that resembled working in parallel to maintain “reasonable prices” as they do now just being played out digitally on the Blockchain in an even more complex manner.

While one should be confident that these transactions will be done in a more efficient manner one must always ask at what cost. My fear would be not that one would not eventually be able to mitigate these things, but that the law will remain reactionary in the same way that the SEC has been with Crypto Currencies. Understanding how Blockchain will either improve or alter that should be a policy concern for those who will not be able to stay abreast on intricate matters of this nature. Algorithms now already fall prey to the intricacies of human interaction.⁷ It is imperative that if these digital systems will start to command more transactions and situations in the outside world that regulations guide this evolution for those who do not have the power to understand it themselves.

III. A SOCIETY UNAWARE

One large problem that the Internet intensified was the use of adhesive contracts as well as multiplied the amount of people who didn't fully investigate the contracts they were signing.⁸ This problem was partly curtailed with the enacting of the UETA because of the regulation around electronically entering into and signing a contract.⁹ Smart contracts add a new another layer to this problem because it is not particularly clear exactly when someone may be getting into a transaction. A highly used example is the purchase of a vehicle by way of a loan. Once the first party comes into to buy the car they must set conditions on which the car can be bought and remain in the owners possession through payment of the loan. Smart contracts modify this relationship by giving wider ability to the dealership/loan owner to enforce non-payments on a loan by stopping the car's use once payments on the car are stopped. This example shows the benefits of Smart Contracts in a very defined way. A company should have the ability to enforce their contract in a more direct manner, as directly stopping use of the car is an efficient solution to a breach of contract. This example is fairly black and white, but transactions are not always

⁷ Christian Sandvig, *When the Algorithm Itself Is a Racist: Diagnosing Ethical Harm in the Basic Components of Software*, 10, INTERNATIONAL JOURNAL OF COMMUNICATION (2016).

⁸ Andrew A. Schwartz, *Consumer Contract Exchanges and the Problem of Adhesion*, 28 (2), YALE JOURNAL ON REGULATION (2011)

⁹ Uniform Electronic Transactions Act 1999 (UETA) § 14, (Apr. 04, 2018, 11:46 AM), http://www.uniform-laws.org/shared/docs/electronic%20transactions/ueta_final_99.pdf.

black and white.

When relationships become more intricate and happen autonomously one could begin to move into a grey area of transactions not being clearly defined as contracts, but effectively establishing relationships with new or familiar entities in ways that one may not be readily aware of. If one thinks of the Blockchain as something in the future that will house much of our information, much like in Estonia right now where the entire government is taking the initiative to make their citizens access services through digital means, then relationships can be established with major corporations that everyday citizens will not take the time to fully investigate.¹⁰ One can imagine a world where you are put on notice once for entering into a Blockchain system all of which can encompass a multitude of actions and interactions, and everything else is implied after that point. For example acceptance on particular Blockchain individuals could have the ability to negotiate contract prices, services like cell phone carriers or healthcare plans. The smart contracts on the Blockchain would be responsible for negotiating prices between the individual and the various companies to reach the most reasonable price. In this scenario Smart Contracts on the Blockchain are facilitating the much needed help of wading through the many available services that competing companies are offering consumers that do not normally have the knowledge and time to do this themselves. Initially entering into the Blockchain would necessitate going through a contract, but does the legal representation of that contract need to detail every aspect of the additional transactions that are bound to come and change in the future. Contracts by nature normally need to be re-negotiated because expecting both the parties to understand and foresee every kind of future interaction is very burdensome.¹¹ Additionally, Smart Contracts do not currently have the capability to be redeployed for modifications and this limits the type of full-scale Smart Contract automations that would be necessary to make a system of very complex magnitude run.¹²

The hope would be that moving forward there were checks at different places within these systems to give consumers the ability to change how these intricate systems were evolving has the system responded to new parameters, but it is not clear how a court will be able to level with a Smart Contract that is attempting to do all of the enforcement through the technology itself. In this current iteration this could be very problematic for people who have lower socio-economic status because they maybe pushed into programs like this being the best viable solution, but have no way to fully track how their own relationships will evolve over time with different companies that they are negotiating agreements with.

The other side of this problem is simply the lack of depth with technology that a lot of society may be forced to interact with generally. There is an ever-widening knowledge gap that everyday people have with technology in general. Most of this technology is in many

¹⁰ Nathan Heller, *Estonia, the Digital Republic*, The New Yorker, (Apr. 04, 2018, 11:51 AM), <https://www.newyorker.com/magazine/2017/12/18/estonia-the-digital-republic>.

¹¹ Christopher D. Clack, Vikram A. Bakshi & Lee Braine, *Smart Contract Templates: foundations, design landscape and research directions*, eprint arXiv (Apr. 04, 2018, 11:54 AM), <https://arxiv.org/abs/1608.00771>.

¹² Id. at 4.

ways harmless whether we understand it or not because not understanding it isn't a direct detriment to that individual's life. Technology failing doesn't mean years of problems and potentially irreversible states of being for an agreed upon relationship, but in the legal field lawyers are all too familiar with the idea of harmless agreements blowing up into large problems that cause havoc on a relationships. For very established companies these problems are mostly negligible and can be written off as part of the adoption process of a new technology or process, but people with limited resources will now have to overcome an additional hurdle beyond their limited ability to fully comprehend every transaction they enter into.

For example, one can take our car loan example again, but this time delve a little deeper into the mechanics of the hypothetical contract by adding a few parameters. Let's also say that the holder of the loan is the same bank that holds several of your loans like your home, student, and a business loan for a company you are starting. It would not be unforeseeable that the bank could package these together in a way that defaulting on one loan payment could effect your usage of the other items also tied to loans. Defaulting on that student loan payment could mean more than just effecting your credit score it could literally hamper your ability to get from place to place. This may seem to some as an extreme example but it is by no means far fetched once enforcement mechanisms are identified for many aspects of our lives. Enforcement of contract being a key benefit to corporations' use of the Blockchain makes it a viable option to disrupt aspects of our lives. This is even more damning on individuals who are not in the financial position to withstand that type of disruption. One solution might be to not sign this kind of agreement, but again this goes along with the assumption that every person is equally equipped to fully understand these types of arrangements which now have an added layer of technology that connects all these once separate functions into a single one. This also doesn't take into consideration governments' on a local and federal level using Blockchain to implement a lot of the federal services that are now desperate across many different entities and departments.¹³

Again the goal here is not to be extremely pessimistic about the potential of Blockchain technology, but simply be aware of how any good system can harm people unnecessarily if those who design and maintain that system are not aware of the different effects it can have at various levels.

IV. CONCLUSION

Blockchain being a budding tool transforming how one think about various fields will be difficult to measure how it is impacting different groups within our society. This reason enough that one must be very conscious of exactly how these developments change both business to business and business to individual interactions. As excited as I am for all the

¹³ Blockchain for Government, International Business Machines Corp. (Apr. 04, 2018, 11:59 AM), <https://www.ibm.com/blogs/blockchain/category/blockchain-for-government/>.

opportunities that Blockchain is opening up for professionals like myself I must remember that privilege plays a large roll in my excitement and all the benefits that we anticipate it will bring.