# International Law and Blockchain Governance: Supplements or Competitors*

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| Article Info | Abstract |
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| | Blockchain's usage is increasing, and the number of possible implications that have been explored and created is mind-boggling. This paper would look at some other potential blockchain implementations in the legal sector, especially in the sense of social regulation. The blockchain-based social regulator, which is neither created nor supported by any government or governmental institution, has the potential to transform the planet or its components into something known as a Decentralized Autonomous Organization (DAO). These assumptions are most likely too broad. The presented research focuses on a key and practical overview of regulations in a blockchain DAO that could be framed in the future and has the potential to affect current legal essentials. The study applies comparative method, using international public law and Lex Mercatoria as primary juxtaposition. |

## Uluslararası Hukuk ve Blok Zinciri Yönetişimi: Takviyeler veya Rakipler

| Makale Bilgileri | Öz |
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| | Blockchain'in kullanımı artıyor ve keşfedilen ve yaratılan olası sonuçların sayısı akıllara durgunluk veriyor. Bu makale, özellikle sosyal düzenleme anlamında, hukuk sektöründeki diğer bazı potansiyel blok zinciri uygulamalarına bakacaktır. Herhangi bir hükümet veya devlet kurumu tarafından oluşturulmayan veya desteklenmeyen blok zinciri tabanlı sosyal düzenleyici, gezegeni veya bileşenlerini Merkezi Olmayan Otonom Organizasyonlara (DAO) olarak bilinen bir şeye dönüştürme potansiyeline sahiptir. Bu varsayımlar büyük olasılıkla çok geniştir. Sunulan araştırma, gelecekte çerçevelenebilecek ve mevcut yasal temelleri etkileme potansiyeline sahip blok zinciri DAO'daki düzenlemelerinin temel ve pratik bir incelemesine odaklanmaktadır. Çalışma, bu doğrultuda uluslararası kamu hukukunu ve Lex Mercatoria'yı içeren karşılaştırmalı bir analiz sunmaktadır. |

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## INTRODUCTION

Most legal advisors and analysts rushed to examine the legal aspects of many blockchain use cases, looking for answers to questions like "How to direct blockchain?"[1] "Can blockchain advancements supplant legal advisors?"[2], "How is it possible for governments to use blockchain as a regulatory device?"[3] and surprisingly more organized questions like "Are cryptographic forms of monetization legal?"

The increasing use of smart contracts raises concerns about the impact they would have on the legal system. Contracting parties can have the ability to create courses of action that are impossible to alter, complex, and potentially less ambiguous than traditional legal contracts by using technology. Smart contracts are seen as a step forward in the new judicial environment, making it more accessible and safer for the general public.

There is a myriad of creative ways, blockchain might be used in the legal field. Given its implications in the processes of dispute resolution, blockchain technology represents a stable and efficient method for streamlining internal procedures in arbitration proceedings[4], such as a means to store copyright data and then use it to settle Intellectual Property (IP) dispute or alter traditional litigation procedures, legal methodology, and the concept of law-related organizations and professions.[5] These applications of the technology leads to prospects in which questions are asked such as: What if blockchain was a law? What if, in other words, blockchain was a social-control mechanism?

With too many people interested, smart contracts and other blockchain-based tools (e.g. blockchain voting software) are gaining traction as a way to communicate the will of the public in a way that is explicit, precise, and, most importantly, legal. This may be the will of individual homeowners, cities, continents, or the entire world's population, or the will of the majority of members of either social circle, regardless of occupation, age, or gender. This paper evaluates whether a will articulated through such a channel is capable of being law and whether local or isolated applications of this technology indicate the possibility of global implications such as the establishment of a global DAO[6]. The paper concludes affirmative.

Analyses of some historic and existing regulatory systems provides a sustainable ground to the assumption that possibility of existence of universal regulatory tools not established, managed or enforced by supreme power (in most cases government) is viable. In the first-place modern international public law as well as historic and to some extent modern Lex mercatoria are

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[1] Trevor I. Kiviat, *Beyond Bitcoin: Issues in Regulating Blockchain Transactions*, *65 DUKE L.J.* 569 (2015).

[2] Ameer Rosic, *Smart Contracts: The Blockchain Technology That Will Replace Lawyers*, Blockgeeks Inc (May 15, 2016), https://blockgeeks.com/guides/smart-contracts/ (last visited May 15, 2019).

[3] Dennis Kunschke & Stefan Henkelmann, *Blockchain & Cryptocurrency Regulation 2019 Germany*, Global Legal Insights, https://www.globallegalinsights.com/practice-areas/blockchain-laws-and-regulations/germany (last visited May 16, 2019).

[4] Mordecai Lerer, *The Taxation of Cryptocurrency: Virtual Transactions Bring Real-Life Tax Implications*, CPA J. (Jan. 24, 2019), https://www.cpajournal.com/2019/01/24/the-taxation-of-cryptocurrency.

[5] Birgit Clark & Baker McKenzie, *Blockchain and IP Law: A Match made in Crypto Heaven?*, *World Intell. Prop. Org. Mag.*, February 2018, at 30.

[6] DAO (Decentralized Autonomous Organization) here and after is used as a reference to a community of members of any decentralized blockchain based network.

used as analogies to run a feasibility test for blockchain regulatory system which further leads to the concept of these two system having a great potential to complement each other.

## I. What impact will the blockchain have on the law?

According to many theorists, blockchain will transform the public power and break it off from its role, allowing for a more direct consensus rule democracy, which means more than just decisions and choices. Government properties are compelled, and blockchain-based arrangements could increase the competitiveness of governments' ongoing tests with accommodating intra-governmental moves,[7] in the dissemination of social benefits, in-state accuracy and oversight of publicly accessible reports, and a variety of other smaller and larger problems. On the one hand, small technologically developed states like Singapore[8] and Estonia[9] are working effectively to improve governmental services, while on the other hand, small though less digitalized ex-offshores like Malta, Lichtenstein, and Puerto Rico are enforcing blockchain technology legislation to replace dwindling revenues from their offshore industries, which were nearly wiped out by OECD (Organization for Economic Co-operation and Development) and United States IRS (Internal Revenue Service)[10] a decade ago. On the other hand, we can see the largest countries, including the so-called Western world, densely populated emerging nations such as India, Bangladesh, and China,[11] as well as notorious dictatorships or autocratic regimes like Venezuela[12] or Iran[13] are all seeking to discover the prospects of this new technology, albeit for profoundly different political purposes.

For certain nations, blockchain is the best approach to improve the popularity of their government. For some, it is a promising tool to evade monetary authorizes[14] or to "strengthen inflexible and tyrant systems, which would acquire a more prominent capacity to control their residents through a progression of self-executing code-based guidelines".[15] Both of the referenced use-cases lead us to believe the same thing: governments are implementing blockchain technologies to become more efficient or powerful. As a result, blockchain is commonly regarded

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[7] *See* Kate Boeding, et al., 3 Potential Benefits of Blockchain For Government, Booz| Allen| Hamilton, https://www.boozallen.com/s/insight/blog/3-potential-benefits-of-government-blockchain.html (last visited May 29, 2019).

[8] *See* Nicholas Say, *Singapore Emerges as Premier Blockchain Development Destination*, Blockonomi (Nov. 1, 2018), https://blockonomi.com/singapore-blockchain-destination.

[9] *See* Anne Veerpalu, *Tartu Node*, *1 Stan. J. Blockchain & Pol'y*, 124 (2018).

[10] Vladimir Troitskiy, *Trends in International Tax Planning: New Qualifications and Tax Jurisdiction Shopping*, in *Challenges of the Knowledge Society*, 831 (Gabriel Boroi, et al. eds., 2019).

[11] *See* Andreas Sandre, *Blockchain for government*, Hackernoon (June 4, 2018), https://hackernoon.com/blockchain-for-government-41e3b097356d.

[12] *See* Kirk Semple & Nathaniel Popper, *Venezuela Launches Virtual Currency, Hoping to Resuscitate Economy*, N. Y. Times (Feb. 20, 2018), https://www.nytimes.com/2018/02/20/world/americas/venezuela-petro-currency.html.

[13] *See* Yaya Fanusie, *Blockchain Authoritarianism: The Regime in Iran Goes Crypto*, Forbes (Aug 15, 2018), https://www.forbes.com/sites/yayafanusie/2018/08/15/blockchain-authoritarianism-the-regime-in-iran-goes-crypto.

[14] *See* Nathaniel Popper et al., *Russia and Venezuela's Plan to Sidestep Sanctions: Virtual Currencies*, N. Y. Times (Jan. 3, 2018), https://www.nytimes.com/2018/01/03/technology/russia-venezuela-virtual-currencies.html.

[15] DE FILIPPI, *supra* note 12, at 203.

as a tool to gain the impact on the global scene.[16] Regardless, it is just one example of how blockchain can be used to influence public policies.

The modern legal system is inextricably linked to the state. There are well-known theoretical disputes regarding the nature of this relationship, but in real life, laws are considered as the products of the state and its institutions.[17] International law is also regarded as a product of states because it is the outcome of some sort of meeting of states' wills.[18]

It is important to note the advancement of blockchain technologies are still rather new. In terms of improving politics, the possibility of laws that are not approved by any authorities but are approved by the majority of the individuals or businesses impacted by the legislation should be given even more consideration. The majority of the necessary structure for the advent of blockchain legislation is already in place. There are test samples – components of the framework introduced by efforts by some legislatures to build crypto economies and endeavors to build "crypto sandboxes"[19] – zones where crypto-based guidelines would be material to business activities, and we also have the opportunity to investigate a model similar to a few groups' test to set up Crypto Utopia in Puerto Rico. Laws figured via blockchain stages that follow measurements of straightforwardness, proficiency, snappiness, and soundness would become a core usage case of blockchain technologies, sourced directly from individuals or organizations. Standard comparative legal research as well as modeling, which is less common in the field of legal science, would be used primarily. It should be a realistic (concept-building) inquiry into the nuances of legal doctrine's conceptual paradigm, with an emphasis on systematization, as well as a completely functional, structural, and dialectical study of blockchain laws, which are likely to appear soon.

The idea of blockchain legislation replacing existing law is not a recent one. Marcella Atzori investigated blockchain technology in 2015 as a "hyper-political device capable of overseeing social cooperation of unprecedented scale and dismissing conventional central authorities."[20] She "promotes the State's position as a critical topic of coordination in the public eye, demonstrating that decentralization by calculation-based consensus"[21] can be nothing more than a tool for governments to boost their public image and a pre-political instrument used by the general public. The researcher's main argument is that drastically reducing centralized governments could lead to unprecedented shifts in the balance between personal and national interests, a phenomenon known as "amoral antipolitics."

Another issue is whether blockchain will be able to replace existing regulatory systems, and if so, what effect will this have on the rest of the planet. In her extensive study "Blockchain and the Law," Primavera di Filippi recognizes that the development of blockchain technologies

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[16] *E. g.*, Li Jie, *China's Ambitious Blockchain Plans Could Cast US Dollar out of the Game*, The Epoch Times (Mar. 22, 2019), https://www.theepochtimes.com/chinas-ambitious-blockchain-plans-could-cast-us-dollar-out-of-the-game_2849020.html.

[17] *See* Hans Kelsen, *Law, State and Justice in the Pure Theory of Law*, 57 Yale L. J. 377 (1947-1948).

[18] David Held, *Law of States, Law of Peoples: Three Models of Sovereignty*, 8 Legal Theory, 1 (2002).

[19] Here we refer to steps taken by government of Switzerland and some announcements made recently by governments of UK, Hong Kong, US and Russia.

[20] Marcella Atzori, *Blockchain Technology and Decentralized Governance: Is the State Still Necessary?* (Dec. 1, 2015), available at https://ssrn.com/abstract=2709713.

[21] *Id.*

can result in the development of "an alternate and complementary regime, made up of self-enforcing technological regulations that are much more stringent and resistant than conventional legal laws."[22] "Lex Cryptographic" is the rule that governs blockchain, and "Algocratic Governance"[23] is the order dependent on code. The "tyranny of code" is seen as a potential cost of eliminating bureaucratic middlemen.

In his article "The Blockchain and the New Architecture of Trust," Kevin Werbach perceives Blockchain as a possible law supplement[24]. Werbach refers to Filippi's "Algocratic Governance" as an "extralegal trust regime," and such a regime is not seen as having the ability to "surpass the power of territorial rulers."[25] Numerous technical faults, the risk of tainted outside data oracles, and the lack of a "state-backed enforcement mechanism to fall back on" are all reasons to consider blockchain technology as a supplement to law rather than a replacement.

In their book "The Blockchain and the Future of Everything,"[26] Paul Vigna and Michael J. Casey state that "Blockchains are a social technology, a modern blueprint on how to rule societies". They do warn, however, that societies "should not permit those with the greatest abilities to control and mold this technology to satisfy, merely their own narrow interests."[27] In 2015, Wright and Di Fillipi warned that we should proceed with caution when considering the possibility of automated legal governance since the implications of its implementations are difficult to predict as "by automating the compliance of the law, we may gain productivity and accountability, but we may also reduce the liberty and autonomy of the individuals".[28]

To put it in perspective, most critics agree that blockchain technology has the potential to become a social regulator. What is in doubt is the competence and thoroughness of such legislation. However, the focus of this paper is not on the dangers that blockchain regulation of social relations can pose; rather, the key issue for this investigation is if blockchain law can hypothetically replace ordinary law, and if so, how it would look and what factors may influence the shift.

A similar experience can be pointed out with the advent of Internet in the 1990s, which ushered in the same globalized world expectations that blockchain does today.[29] This analogy is good for stressing the magnitude of expected improvements, but it is not sufficient for a practical comparison. To test the position of the social regulator on blockchain from a legal perspective, we should first look at the other social institutions that perform or have performed the same functions. Currently, these functions are performed mostly by government enacted laws. There are several determinations of law in the context of law and philosophy. In his famous De Ligibus, Marcus Tullius Cicero wrote, "Law is the source of the precepts we most need to direct us in our conduct"[30] The Collins dictionary defines law as, "a system of rules that a society or government develops in

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[22] DE FILIPPI, *supra* note 12, at 210.
[23] *Id.*
[24] Kevin Werbach, The Blockchain and the New Architecture of Trust 171 (2018).
[25] Id. at 171.
[26] Michael J. Casey & Paul Vigna, The Truth Machine: The Blockchain and the Future of Everything 15 (2018) at 14.
[27] *Id.* at 15.
[28] Primavera De Filippi & Samer Hassan, *Blockchain technology as a regulatory technology: From code is law to law is code*, First Monday (Dec. 2016), https://journals.uic.edu/ojs/index.php/fm/article/view/7113.
[29] Marco Iansiti & Karim R. Lakhani, *The Truth About Blockchain*, HARV. BUS. REV, Jan. – Feb. 2017, at 118.
[30] Francis Barham, The Political Works of Marcus Tullius Cicero: Comprising His Treatise on the Republic, and His Treatise on the Laws 68 (1842).

order to deal with crime, business agreements, and social relationships."[31] And this is how almost everyone interprets the term. Whether or not a bitcoin is a contract in the traditional sense is not that important, both bitcoins and traditional contracts are artifacts[32] and no matter whether blockchain regulation should be considered a law or not now, it may perform the same function in the future and become a unique social-political phenomenon. This prospective fully depends on general acceptance, recognition and acknowledgment, which altogether are called legitimacy.

It is fundamental to stress that a blockchain-based social regulator which is subject of this research lacks a foundation created, approved, overseen or enforced by governmental entities [33]. This is the most distinguishing feature of the blockchain regulatory framework: the regulator's absence, as well as the absence of those with a vested interest in enforcing the rules. One might argue that governments in today's vote-based regimes are merely intermediaries who communicate people's desires in a roundabout way. That is theoretically clear, but governments are terrible intermediaries. Aside from being expensive and moderate, policymakers are one-sided, ruining and communicating citizens' desires in a jumbled manner, with the goal of what they eventually bring into legislation often contradicting what residents are expecting.

The second significant differentiation is that national laws are mostly of territorial scope, while that of blockchain regulation can be characterized as extraterritorial. Territoriality is the eminent standard of legal authority under public international law,[34] and representing one of the four fundamental attributes of a state, along with population, government, and sovereignty. The region is both a physical and legal characteristic, and the regional authority is vested with sovereign powers over that territory and population by means of legislation, judiciary and enforcement. A blockchain regulatory system operates in the form of a DAO, which can put together actors based on any criteria or its set or remain absolutely open and hence be truly extraterritorial. Even in case entire population of some state becomes a DAO, the blockchain regulatory system is absolutely unrelated to sovereignty concept.

The absence of a regulator with state-sponsored policing and punishment systems represents the third major distinction. The lack of government resources for imposing laws would not rule out the likelihood that someone new will step in to fill the void. The DAO, on the other hand, should establish new enforcement strategies. The blockchain legal framework would have features similar to those of conventional regulation. It should be made up of a series of guidelines for human behavior. Nonetheless, there are nuanced differences. The majority of researchers believe that not all rules can be quickly transformed into code.[35] Rules leave some space for understanding, while a code is a static instrument that is intolerant to uncertainty. «The translation of often fuzzy legal predicates, otherwise capable of expression in truth-functional logic, into

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[31] Law Definition, Collins English Dictionary (13th ed. 2018), available at https://www.collinsdictionary.com/dictionary/english/law.

[32] Jeffrey M. Lipshaw, *The Persistence of "Dumb" Contracts* (Jan 22, 2019), Stan. J. Blockchain L. & Pol'y, https://stanford-jblp.pubpub.org/pub/persistence-dumb-contracts.

[33] Using the term *government* or *governmental* we refer to any governing institution authorized to establish regulation including but not limited to all types of parliaments, executive power bodies, courts and municipalities.

[34] Santiago Torres Bernardez, *Territorial Sovereignty*, in Encyclopedia of Disputes Installment 487-494 (Rudolf L. Bindschedler et al. eds., 1987).

[35] DE FILIPPI, *supra* note 12, at 199.

digital proxies expressible in the non-ambiguous discrete units of code," is a huge challenge.[36"] That is a credible argument, mathematical language and human language is obviously not the same. Some authors compare code language to the language of own professional practice, let's say English, and the difference is huge. For example, if an Iranian family-law advisor transplants his professional practice to an absolutely different legal environment, such as Swedish criminal law, the advisor would discover the distinctions not less extraordinary in any event and not solely due to the new juridical language but instead due to qualification problems, diverse legal culture, and changed theoretical standards on which national sets of laws are based. It will require time and efforts but early or later legal advisors and common people will start using «code» as legal language. Furthermore, one must contend with the fact that "aspects of human thinking and interaction will continue to be the most difficult to replicate on a machine"[37] and that *deciding* will remain something that is fundamentally different than *reasoning* by way of logic or code. Both phenomena are transformable and though differences are significant, human thinking and code reasoning will accommodate each other and become parts of the same system.

As previously stated, researchers and ordinary people believe that blockchain is something revolutionary new. Same applies to the aspirations and challenges it brings to the legal world. Thus, would it be the first time in human history anyone other than kings, or governments, or gods can create, or sanction, or authorize "the law".[38]

First of all, law is not the only normative domain on this planet; morality, religion, etiquette, and so on also guide human conduct in many ways that are similar to law.[39] Though partially the understanding of the nature of law is related to its interactions with other normative orders, like morality or social conventions, the comparison of blockchain regulation and these "other regulations" is relevant to a very limited extent. What these regulators are lacking is certainty in determination.[40] Besides, even having own mechanisms of enforcement, these norms yield on importance of rules of law in the public mind and mostly serve as something that can complement law rather than substitute it. By contrast, blockchain regulation is widely seen as an instrument reducing uncertainty around interpretation or application of rules.[41]

## II. Blockchain and International Law

Governments create public international law either directly via intergovernmental collaboration or through their relationships with international organizations. As a regulatory system international law has many similarities with hypothetical blockchain DAO and thereby

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[36] Lipshaw *supra* note 69.

[37] *Id.*

[38] We intentionally avoid deeper analysis of Natural law theory (lex naturalis) based on the idea that some rights are inherent to an individual by virtue of human nature and thus not dependent on being granted, authorized or sanctions by sovereign powers or need to be confirmed through any democratic mechanisms. This is a rather theoretic concept widely examined in law literature. For purposes of this paper we focus on positive law that is a product of state sovereignty and the possibility of such mechanism as blockchain regulation to replace it in full or in part.

[39] *See* Andrei Marmor & Alexander Sarch, *The Nature of Law*, Stan. Encyclopedia of Phil. (May 27, 2001), https://plato.stanford.edu/entries/lawphil-nature/.

[40] Liam Murphy, *The Boundary of Law: Law, Morality, and the Concept of Law*, Edmond J. Safra Center for Ethics (Oct. 28, 2004), https://ethics.harvard.edu/event/boundary-law-law-morality-and-concept-law.

[41] DE FILIPPI, *supra* note 12, at 195.

comparative study of the mentioned regulatory systems is of great value. The United Nations Charter declares sovereign equality of all States: none of the states has supreme authority to dictate or regulate the behavior of peers, neither do other subjects of international law including the United Nations Organization itself. Instead of having "government for governments", international law empowers sovereign states to create rules via established consensus mechanism. There is no supreme power, but world governments in collaboration are supposed to make rules work. The same set of features can be used to characterize "Blockchain Law." Some argue that international public law is not as successful as it can be, which is correct. However, it is difficult to argue that 75 years of modern international law history are proof positive - a self-governing system of social regulation will exist without an incomparable force controller. Another big problem that hinders the concept's credibility is the sample group. Approximately 200 states exist today in this world, including their analogs and some Nations fighting for freedom and recognized by some countries. It is a comparatively small number of system players, perhaps less than the size of an ordinary condominium, and hence the significance of the model may appear to be inadequate. However, we should consider that there are still full topics of international law for international organizations and their will is not only an augmentation of the governments' will. Despite being produced by nations, their wills are distinct from those of their founders. Adding this group would enable us legally to expand the number of actors to over 700,[42] more applicable sample size, compared to which participating in a regulatory framework. Many analysts believe that international law is now experiencing a profound recession.[43] However, almost 65 years of modern international law experience demonstrate that an autonomous legal system can function without the oversight of a regulator with a vertical hierarchy.

When comparing blockchain, a self-regulatory framework, to self-regulatory organizations, we find that these names may be misleading. These groups make laws, but they do not build a self-contained regulatory structure. Governments simply transfer their administrative duties to third parties, just as they do for other public functions such as prisons, tax collection, and even some overseas embassy services. Governments, on the other hand, strictly control "the self-regulatory mechanism," sanction self-regulatory entities and their actions, and provide them with state compliance authority.[44]

### III. Blockchain and Lex Mercatoria

Many scientists present long-standing cross-border trade customs as examples of regulatory tools that have restricted ties to the public and international law, portraying historical lex mercatoria and modern collections of codified customs as types of legislation that are not influenced or authorized by national or regional authorities. There are strong parallels between lex mercatoria and Blockchain law in this regard. The lex mercatoria, which dates back to the Middle Ages, was a set of laws that independent traders agreed to and followed. It developed almost

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[42] *See* Richard Woodward & Michael Davies, *How Many International Organizations Are There? The Yearbook of International Organizations and its Shortcomings*, Pol. Stud. Association (Oct. 11, 2015),

[43] *E. g.*, Rafael Domingo, *The Crisis of International Law*, 42 Vand. J. Transnat'l. L. 1543 (2009).

[44] The activities of self-regulatory bodies remain useful research material and may be seen as examples of consensus mechanisms. Any of them could be the first to use blockchain as a management and decision-making mechanism, and their expertise may be valuable as a prototype for some blockchain regulatory framework components.

"untouched" by governments.  As a result of merchants' repetitive conduct, the rules were formulated and brought into force. The will of the entire trading community was therefore never interpreted by a third party; rather, it was expressed directly via formation of rules through repetitive actions. It could take decades to formulate a norm with a meaning commonly adopted. Despite its shortcomings, we must acknowledge that the classic lex mercatoria emerged as a system of rules, procedures, and mechanisms that operated almost independently of state authority. However its foundations gradually evolved, shifting towards enhanced formality and improved ways of finding and understanding the rules but at the same time bringing it under state sanctioning requirement.  Ralph Michael says, "although an anational merchant law would be theoretically possible, the true *lex mercatoria* we are currently observing is not such an anational law.[45]" Modern lex mercatoria is governed by national legislation, and it is founded on the idea of contractual equity, which has been a fundamental principle in most legal systems. As a practical result of being licensed, it benefits from state enforcement procedures. Modern lex mercatoria is a part of customary international law and is a recognized primary source of law in common law countries and a secondary source of law in other jurisdictions. These customs are compiled, codified, and translated by intermediaries such as the International Chamber of Commerce and UNIDROIT (The International Institute for the Unification of Private Law). The aforementioned bodies prepare, revise, and amend customary law codes regularly; the most well-known of these codifications are INCOTERMS (International Commercial Terms) and Principles of International Commercial Contracts.

The authentic example of lex mercatoria is a significant paradigm for this research. It demonstrates how an anational social regulator can be a productive indirect transformation of members' wills into legal codes. The described shortcomings of early *lex mercatoria* can be effectively eliminated or diminished by new technological tool and blockchain technology seems a perfect fit. In blockchain environment, by means of prescribed protocol rules can be established or modified fast and easy.

International public law and international private law, has the chance either to receive a technological supplement or a strong competitor when blockchain legislation comes to the stage. The concept developed in this study illustrates the technological feasibility of a blockchain-based regulatory system for controlling the social interaction of large groups of individuals. Many social, economic, mental, and technical influences determine whether it becomes a form of mutual complementation or a form of rivalry.

There are other examples of regulative environment not related to the state. Technical regulations, both national and international, are worth mentioning. Except for sanitary standards and other technical regulations affecting the protection of public interests, the technical standards are mostly formulated and brought into action via private channels. Business associations, labor groups, and other so-called self-regulatory organizations, which are often endorsed or subsidized by governments, present these networks, once again demonstrating that blockchain law as an anational law can exist and function.

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[45] Ralf Michaels, *The true lex mercatoria: law beyond the state*, 14 Ind. J. Global Legal Stud. 447 (2007).

## IV. Technology essentials and blockchain law key characteristics.

What has been discussed so far is not limited to blockchain technology, but rather to any system that displays a set of characteristics inherent to this technology. These characteristics include the ability to operate as a decentralized network, flexibility, authenticity, assurance, and the ability to process large amounts of data efficiently. In terms of human behavior control, these technical characteristics are converted into socially relevant system fundamentals:

1. There is no sovereign or other topic of superpowers (distributed network).

2. Legitimacy – widespread recognition of a series of rules as regulatory authorities (provenance and immutability, modern confidence mechanisms).

3. Consistency in form (clarity).

4. The ability to operate as a boundary-free regulatory framework (decentralization and accessibility).

5. Accessibility for an infinite number of users (Data processing).

Blockchain-based protocols are layering additional technology to process what can essentially be thought of as small computer programs—what technologists often refer to as "smart contracts."[46] However, this blend of peer-to-peer networks, public-private key cryptography, and a set of rules aimed to manage how information is recorded in the shared database and verified by the network can be named a "consensus mechanism"[47]. These technologies will cause a synergy, called "the meeting of the minds," accurately capturing every purpose, serving as an indicator of a party's will, and generating quantitative reality.

In order to evaluate whether blockchain law would eventually supplant conventional law, one would have to explore first whether a global DAO, a sort of a transnational savvy popular agreement would be probable and second whether there is any function in conventional (state) law that blockchain guidance cannot perform.

By sticking to the basics, we will not overcomplicate the first question by adding more specific inquiries on when and under what condition all of human beings on the planet can form one or several DAOs. Obviously, every user should at least be concious, have relatively reliable access to the network and be at least a little bit technically skilled, which hardly is the reality today, but things can change. Anyway, if thinking about any single intelligent individual on the Earth, the correct answer is negative. Someone will inevitably be out of the network; these could be disrupters or uneducated individuals, individuals living in distant zones, or simply not willing to be parts of the network. Could we exchange "all and every" for simple majority or overwhelming majority? We are contrasting blockchain law with traditional law, the latest being a product of sovereign power covers not everyone on this planet and it is not solely about stateless people living in international waters. There were and there are regions that because of common conflicts, cataclysmic events, or different reasons are not covered by the coverage of any law. The case of

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[46] An introductory paper to Ethereum, introduced by its co-founder Vitalik Buterin before launch, which is maintained and available at https://github.com/ethereum/wiki/wiki/White-Paper.

[47] Cardozo Blockchain Project, *supra* note 33.

Somalia is a bright example.[48] In numerous nations, particularly in country territories, babies are not always recorded in registers and consequently have no documents do not express their wills as regards to public policies via customary channels. As per research directed by Inter-American Development Bank in 2007 up to 5% of infant Paraguayans have not been registered during the first year of their life and some individuals live their entire life without any interaction with the state, including registration, voting, getting any documents or social benefits [49]

These examples do not sabotage the effectiveness of a legal order, because the negligible part of such individuals or domains is generally little and because laws can be implemented even notwithstanding a few people can deliberately or unexpectedly appear to be out of the framework. The way that the public authority has not tallied somebody implies that this individual would not get security or social advantages from the public authority, it additionally implies his assessment would not be needed in the law-production process, yet this does not change the fact that this person lives under the auspices of a sovereign authority. There is no doubt that if an unregistered Paraguayan murders anyone or attempts to overthrow the government, he will be prosecuted. When a Somalian leaves the realm of chaos, the same thing will happen to him, as will a stateless citizen who infringes on someone's rights in international waters. That is why legislation is seen as occurring even by those who are ignored by regimes or believe they are outside the system. If we imagine the world of legal subjects as a DAO (which it isn't), then membership in this semi DAO is not optional; it is necessary.

Participation in the DAO itself, on the other hand, is completely optional. One should own Bitcoin and thereby become a member of the Bitcoin DAO, bringing his will into the decision-making process and trusting in the meaning of Bitcoin and everything else in the DAO. Someone who is not a part of the network, on the other hand, would ignore both Bitcoin and the mechanism, giving it no value and implying that it doesn't work. No supreme or absolute power will come knocking on the nihilist's door and force him to buy Bitcoin and enter the DAO. That implies that for those outsides of the DAO, blockchain law will seem to be non-existent, rules breaches will not be considered as such, there would be no intimidation process to compel somebody to accept and respect the rules.

Nevertheless, it is incorrect to say that blockchain legislation has no regulatory framework and that there are no means to get outsiders into the DAO.

**V. The enforcement problem: Awareness, Acceptance and Compliance.**

The three different types of people who potentially can break the blockchain rules are following:

1. Those that are not members of the DAO and are unaware of the law,

2. Those who are members of the DAO but are unaware of the rule but do not accept it.

3. Those who are members of the DAO but are unaware of the rule either knowingly or unconsciously breach it.

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[48] Stig J. Hansen, *Warlords and peace strategies: the case of Somalia*, 23 J. Conflict Stud. 57 (2003).
[49] *See* Dwight Ordóñez Bustamante, El subregistro de nacimientos en Paraguay: Las consecuencias (2007).

The enforcement tools targeting last group depend on the DAO type. Violations of laws will result in fines such as higher commissions, extra payments, and charges whether the DAO manages or is a part of some financial service. Non-monetary punishments may include account suspension or data access restrictions. Punishments, on the other hand, are just one weapon in the law enforcement arsenal. Public condemnation, public education, and inspiration will also help blockchain enforcement. Any of the latest implements used by online services to make consumers to act properly can be successfully used by blockchain legislation. For example, businesses like AirBnB, Turo, Uber, and others advocate regulation compliance for all users not just for service providers. Since these websites are not decentralized, they may potentially exploit customer feedback by erasing records or modifying the way the average ranking is calculated to generate more sales or for other reasons. However, if it were to function as a decentralized method, coercion would be almost impossible, a precedent would be preserved indefinitely, and the repercussions of having poor feedback would be much more severe for customers.

The method will be integrated into blockchain law by awarding a ranking to DAO participants depending on their behavior. The DAO member with statistical data showing a history of violations will be excluded or barred from almost all legal or business activity in the future, while the DAO member with high values may be a suitable counterparty and may be able to achieve more desirable conditions in any social interactions.

Acceptance and perception issues can be solved through the ascendable effect and the scale of the DAO. For example, when the telephone system was first adopted, the user base was limited, and phone users had few numbers to dial. There are probably many people who are not using phones, but regular social life certainly requires the use of phones for personal and professional reasons and the number of individuals who can access a phone is nearly equivalent to the number of people who could use it. As a result, when the majority of the population uses a computer, the internet, or is a member of a DAO, the community's remaining people have little options other than to admit channels of accessing the network, even though they are unhappy about it. Assume that the value of bitcoin has increased significantly, and that the majority of users use it at least occasionally, and that there are a plethora of utilities and products that can only be purchased with Bitcoins. In this situation, not using Bitcoin would put people at a disadvantage in a variety of ways. Even though some of them obviously might not like or value Bitcoin, the ease and willingness to communicate with other DAO participants will ultimately be a strong argument for those who are "out" to join and stick to majority's behavioral pattern.

In either case, disruptors will remain. However, as long as they remain a minority, they do not pose a significant threat for the framework's maintainability. They do not take part in the creation of standards, but as seen above, the law enforcement process has mechanisms in place to authorize laws even for those who refuse to acknowledge the law's existence. Same rules do not work for blockchain regulation. Unless in our attempt to predict the future of social regulation we rely on some fantastic plot picturing world of robots controlling every field of social life, the blockchain law enforcement cannot do much to individuals if they are out of regulative DAO or if even being "in" they commit serious offence incomparable by its gravity to any of the sanctions in the blockchain enforcement arsenal. At times it can ruin the outers' life by cutting them from some socially reasonable communications just as influencing monetarily, yet blockchain

regulation can't completely supplant the law enforcement set of instruments. It is not likely even to successfully influence a monopoly manipulating market position, the blockchain legal system obviously has no one to pursue a killer, fraud, or abuser.

"Code can be the law" (for example code having the impact of law) and "law can be the code" (for example law being characterized as code).[50] Regardless, the substitution is not comprehensive. The self-governing blockchain law can theoretically replace ordinary legislation, but the blockchain regulatory system cannot fully replace traditional sets of rules, which covers the process for interpreting and enforcing the law. When a system cannot work on its own and requires at least government interference, it is no longer entirely self-contained and, as a result, is vulnerable to the same diseases as the legal system.

## CONCLUSION

The regulatory environment under which blockchain law could supplant conventional law is large. The bulk of social relations now secured by private law, as well as a large amount of public law, such as administrative law, tax law, and labor law, would be covered by such laws. It may also play a key role in defining rules, complementing the enforcement system, and controlling state enforcement for the remaining partnerships that could need physical interference by state legal force to be efficiently regulated. The probability of blockchain legislation would be influenced by several considerations and issues:

Since blockchain law is a global smart contract, it is built on smart contract principles and inherits many of its flaws. Aside from its underlying programming, the DAO doesn't need outside help in determining how to fulfil its primary function – social behavior management. The main question is how to construct a universal and "ideal" set of pre-set rules that depicts what can happen in DAO, how it can compile individual wills, turn them into the decision of majority, and present them as rules of law. Who would take the responsibility of becoming an "originator"?

The purpose of this paper was not to debate whether replacing traditional law with blockchain law would have a positive or negative effect on anything; rather, we're attempting to determine if such a substitution is potentially feasible and whether there are considerations that can help drive the transition along. This regulative environment would not be optimal. Furthermore, it can tend to be harmful or frightening. Anyone may become a founder if they write a series of pre-programmed rules articulated in the form of code that, when combined, present a framework for generating rules by collecting user intentions and enacting legislation. Natural selection has the potential to make this method global, allowing it to compete with existing legal systems. By this we mean natural selections based on criteria of ability to survive as a self-regulation mechanism and avoid immediate collapse that killed the first known DAO, sustainability and universality of rules covering wide variety of what can happen inside the DAO. For example, despite several attempts for the establishment of Facebook-like networks, there is no second Facebook. A similar result may also apply to the blockchain regulatory framework: any

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[50] De Filippi, *supra* note 66.

regulatory protocol matching set of criteria turned into DAO may lead the competition at some point and take over the regulation of social relations globally.

The "fork challenge," which is one of the big issues with current DAOs, may result in the existence of several "overlapping" regulatory DAOs in the case of blockchain regulation, which, like other blockchain systems, may lead to "fork rivalry." The rational answer to this issue is that dimension limits controversy. In general, blockchain law is a method of voicing majority will, and the bigger the DAO, the less probable an alternative reality will survive. Would it transform the planet into code tyranny – it is outside the scope of this analysis. However, it is undeniable that the progression of blockchain legislation would drive regulatory demands towards populism, with no respect for the needs of those who deviate from the standard.

The advancement of blockchain law will affect legal science and, most certainly, will bring us back to the origins of natural law theory. While natural law is an old concept, blockchain regulation is a contemporary technocratic tool. As Natural laws are intended to exist objectively and therefore belong to everyone in their life without the need for a monarch or law;[51] blockchain regulations can exist quasi-objectively, regardless of the systems and institutions' will. It might turn into another measure of objectivity signifying "compound judgment of majority", rivaling customary one signifying "absence of judgment and bias".

It is reasonable to conclude that, rather than being an earthquake heralding the start of a transition, blockchain regulation will first serve as a strong impetus for legal growth. The present law theory is to be adjust ed, but most of its core foundations will still be able to accommodate new element. Though, being soft by character and slow by speed the changes may lead to a shift in the core values of modern social structure and reshape virtually everyone's life in the foreseeable future.

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[51] Robert P. George, *Natural law*, 52 Am. J. Juris. 55 (2007).

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