From Blackstone to Blockchain: Theorizing Property Law in the Age of Cryptography

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Abstract In this concise introductory contribution I ask how blockchain technology has already and how it will in the future effect the basic underpinnings of property law theory. The chapter presents three main features of a blockchain cryptographic technique, and in addition, three features of property rights as acknowledged by the famous work of William Blackstone of the eighteenth century. The potential interaction between these features is briefly discussed.

Keywords Property theory · Property rights · Blockchain · Hard-fork

1 Introduction

This introductory chapter asks how blockchain technology has already and how it will in the future effect the basic underpinnings, the way we understand and capture, property law theory. Some writers already suggested that blockchain is a new institution of property (Ishmaev, 2017), or even, under wider implementation of it, can lead to the disappearance of property rights (Wright & De Filippi, 2015). In order to assess these claims, the paper considers whether property as understood by William Blackstone, of the eighteenth century, is relevant in times of Blockchain, of the current millennium.

The chapter is structured into three parts. First, I ask what characterizes "the age of cryptography"? Secondly, I attempt to explain what is a "Blackstonian" property law theory, and whether it remained relevant to property law theory over the centuries. Lastly, I address the core issue of the interaction between Blackstone and Blockchain and the effect this may have on democracy.

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2 "The Age of Cryptography"?

Let me begin with putting a question-mark above the identification of these times as "the age of cryptography" and discuss the meaning of the term. Cryptography, as we all know, is not a recent invention, and encryption methods were used and developed since ancient days. However, the computer era has brought us significant advancements in cryptography, among which are the supplanting linguistic encryption with the operation on binary bit sequences, and additionally, the extended complexity and availability of cryptographic techniques.

With no doubt, the introduction of the public key or asymmetric key cryptography starting with Diffie and Hellman's (1976) paper, signifies a dramatic development for cryptography. Diffie and Hellman explain that a system with a large number of users who change allegiance frequently, such as in the business world, requires ways to preserve privacy of communication without assuming trust between users. The need for public key cryptography thus emerges from issues of trust and cooperation. It addresses the desire of each actor in a society to safely interact with others without relying on social commitments to secure one's interests. Where private relations are secured without reliance on familial and social bonds, the boundaries of interaction and benefiting cooperation are extended. Although cryptographic-based ledgers, such as Bitcoin, offer full public access to records (Ishmaev, 2017), public key cryptography does not mean the publicization of private relations by subjecting them to a centralized organization, such as the state's institutions. To the contrary, it is the decentralization of power and control that is at the basic of new cryptography.

Therefore, cryptographic techniques can be characterized by three important features that they possess, at least to a certain degree: they allow to overcome trust and cooperation setbacks among those who otherwise won't interact; they eliminate the need to rely on state or any third-party authority, and they offer universal, albeit anonymized, access to the knowledge they contain about rights. The extent to which new cryptography has changed the world, the extent to which it is justified to ask how to theorize property at the cryptographic age, depends on whether, to a significant measure, there are practical applications of cryptographic techniques that meet these criteria. There are reasons to suspect that at least in some cases, such as with "blockchained" systems of land recording, the reliance on intermediators and third-party enforcers will persist. So is even sometimes the case with cryptocurrencies, as Arruñada (2018) describes, that are still subject to third-party enforcement (such as in the DAO example). However, theoretically, we can ask whether these features, if exist, offer a novel understanding of property that amends our current one, and whether, if human discretion is maintained what effect that would have on our existing governmental institutions.

3 Blackstone and Property Law Theory

I will now turn to shortly explain what has come to be known as the "Blackstonian" theory of property and its place in modern property law theory. William Blackstone famously defined property, in his 1765 Commentaries on the Laws of England (1765, 1830, 2:*2), as "that sole and despotic dominion which one man claims and exercises over the external things of the world, in total exclusion of the right of any other individual in the universe." In this, three features of property right, ownership in particular, were identified. Firstly, property right as related to "external things of the world," i.e., things that can be separated from oneself (Penner, 1997). Secondly, property right as allowing "sole and despotic dominion" over a thing, i.e., the absoluteness of property holders power to exclude others, to disregard them, as an execution of one's right; thirdly, property as being a right over a thing, that avails against "any other individual in the universe." That is, the *in rem* character of property which allows a property right to be enforceable upon others without them knowing who the holder of that right is. This feature of property, the burden it puts on others, is vital for the understanding of property as distinctive from other types of rights.

Over the years these three features of property were under massive attack. As far as identifying what is a "thing," long way has gone since things were solely regarded as actual possessions. For instance, Charles Reich (1964) famously coined the term "new property" to reflect the propriety character of non-tangible assets such as regulatory benefits, licenses, subsidies, etc. The debates about the current definition of a thing are still prevalent (Wyman, 2017). With respect to the absoluteness of owners against others, it has been argued that the famous citation from the second Commentary presented above does not properly reflect Blackstone's himself rather much more balanced understanding of property law (Burns, 1985; Rose, 1998; Schorr, 2008). Furthermore, the "absolute dominion" view was used as a "red flag" for all those who asked to point at the social responsibilities of owners (Dagan, 2011; Munzer, 1990).

As regards to the *in rem* nature of property, legal realists following Hohfeld (1917) and economists such as Coase (1960), disregarded this unique character of property relations with a thing. Subsequently, the *in rem* notion of property was replaced with the metaphor of property as reflecting a bundle of rights, leading to an ongoing debates among legal scholars (Merrill & Smith, 2001). These debates were sometimes colored as "bundle of sticks" versus "the right to exclude," an approach according to which the power to exclude others, to set a boundary, is the ultimate virtue of ownership. But as Smith (2012) and others argued, exclusion is not an end but rather a means to allow us *using* things as we desire—to set agenda to them (Katz, 2012).

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We can therefore position one against the other three features for each of the systems. On the one hand, we have Blockchain, with its requirements for transparent records; decentralized enforcement mechanism; and the nature of allowing non-familiar parties means to communicate and cooperate without knowledge of who is "behind the block." On the other hand, we have Blackstone's theory of property, with the requirements for a separation between oneself and a thing; the granting of using powers—also limited and not absolute powers—that are subject to the social bonds an ownership status generates; and the nature of right that is applicable against all others, whether they know or do not know about the identity of the owner.

Are these two systems different one from each other? What are the issues raised by the interaction between the two sets of features characterizing each of them? One may think of it as a thought experiment: how would property theory developed if the cryptographic foundations have been there all along?

As this contribution is very limited in its scope and aspiration, I only want to suggest that there is a need to think of a variety property-related issues and consider whether there are important amendments to property theory intrigued by Blockchain.

For example, one of the issues that is most important for property rights theory is trust and cooperation among owners, users and third parties interrelated with a property, versus anonymity and the existence of massive amount of potential parties as characteristics of blockchain-based systems. Evolutionary theories of property such as those based on the works of Hardin (1968), Demsetz (1967), and Ostrom (1990), identify property rights as an answer to a tragedy of the commons, of over-using resources in societies that are not based on close-knit social relationships. Blockchain as a social development is coherent with this background of formalization of relationship as alternative to human-based interactions. The difference is that for Hardin and Demestz the assumption is that the problem is of limited resources, and that there is a fight over them. The proper and efficient investments or labour attached to assets, require confidence in the ability to capture the value created by these investments. For Blockchain, we can ask: what is the limited resource that we are fighting over? What are the investments that we wish to incentive? In other words—is it good to society to have Blockchain-based new resources such as cryptocurrencies? Are there any limitations on production, uses, or transfers, that should be accounted for?

Another key issue for property theories are the centrality of the *Nemo dat quod non habet* principle versus market overt, or the irreversibility of transactions. One of the main characteristics of a property right is that it is traceable. Meaning, an owner may trace her rights to whom and to where it has gone to if it was not under her consent. There are exceptions to this rule, which is also known as *nemo dat*, which can be combined under the title of market overt. Accordingly, regulative norms estop owners from reaching to their lost-to-others properties due to public interest such as the stability of the market. For Blockchain, irreversibility, or market overt, is mandatory, creating a potential clash between the systems (Lehavi, 2019, p. 213).

Market overt is usually dependent on conditions of open market, bone fide purchase, and consideration. In other words, market overt and other rules that eliminate rights such as adverse possession are justified on a balance between market and moral considerations. The irreversibility of Blockchain does not necessarily rely on moral justification—it can protect fraudulent actors. Should the stability of the market be granted such an absolute weigh to overcome all other considerations? Does the need to decisively identify the owner justify avoiding a more nuanced balance of interests approach, that considers issues such as who values the asset more, who is more blameworthy of the "accident" as is required under current understanding of property?

These are only two examples. In fact, the most basic building blocks of property such as possession, transaction, or ownership should be rethink. On the more organizational or political levels, the transition to a privatized model of ownership, that is handled and governed not by governments, raises important questions about discretion, power, and democracy. When the Soviet Union fell, many governments around the world privatized assets from political to private hands. Similar patterns occurred in recent years with the World Bank efforts to formalize land rights. Carol Rose argued that the transition to a privatized mode of private property and contract may fundamentally advance the growth of democratic institutions but that is only if there is a pre-existing accountable institutional infrastructure (Rose, 2005). Blockchain as a technology to govern property rights, may have the virtues of democratic governance that is global or borderless. But this depends on how the human aspect of a given system is set. Whether there are hard-forks or not, and who is there to decide, would have immense effect on the nature of the governance of property the future bears for us.

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