

GREAT CRYPTO EXPECTATIONS: THE ROAD TO BLOCKCHAIN AND INTELLECTUAL PROPERTY RIGHTS

-Aniqua Zaki and Anam Danish

ABSTRACT

Blockchain has proven to be much more than simply being an underlying technology for bitcoins. In this essay, we explore how blockchain eliminates those limitations that shadow intangible rights such as patents, copyrights, trademarks. We further investigate the role of the legislature and other government bodies in the successful application of blockchain in various Intellectual Property Intensive Sectors. We take a look at a case study involving ascribe(ascribe.io), the first platform to apply blockchain for Intellectual Property Rights, while simultaneously inspecting the role of Indian authorities in recognising the technology as a valid public ledger. The essay focuses primarily on the potential opportunities that blockchain could bring regarding the future of IP law and address its potential impact on the registration, management and enforcement of intellectual property rights. The paper ends by presenting some recommendations to pave the way for the development of blockchain technology and to expand the number of people this technology reaches, as well as its efficient incorporation into the various systems and registration / transaction networks that we use today.

I. INTRODUCTION

A recent report by the government of India put cryptocurrency in a positive light putting the mechanisms, surrounding it particularly blockchain, in a positive light. In this essay we have dealt with how blockchain is a technology of the future. Firstly, we have described and explained how blockchain came to be its application and its distinctiveness. Secondly, we have discerned Intellectual Property Rights and the limitations attached to them in the present scenario. Thirdly, we discuss the potential of blockchain in the world of Intellectual Property and how it could enhance and secure different Intellectual Property Rights. Finally, we take a brief look at a case study involving the first platform to have employed blockchain, while taking a look at the involvement of the legislative framework.

II. UNDERSTANDING BLOCKCHAIN

In 2008 Satoshi Nakamoto reintroduced the idea of Blockchain in his white paper titled “Bitcoin: A Peer-to-Peer Electronic Cash System.”¹ Satoshi Nakamoto; an anonymous person/group is said to be behind the first blockchain, through which came Bitcoin.

According to IBM blockchain is a transparent and tamper-proof digital ledger.² Simply speaking, blockchain is a record of transactions. The transactions can be divided on the basis of assets. These assets may be tangible in the form of houses and cars or intangible like digital currency or Intellectual Property Rights.

Blockchain essentially stores data and monitors its movement through records. This data is immutable, each transaction gets stored as blocks, these blocks are then linked together and are secured through military-grade cryptography and cannot be modified. Additionally, these blocks of records are copied to every participating computer in the network, so everyone will have access to it. Blockchain stores any and every kind of asset along with all their details.

STRUCTURE OF BLOCKCHAIN

Each block in a blockchain contains stored data, these collectively form a chain. Hence the name. It's like a game of memory. An individual says a word the others continue to add information to the series while continuing to store the past information. The very same way a block stores data then comes the ‘previous hash’ which stores data of the previous block. Followed by the ‘hash’ which stores information on the current block

The data in the blockchain is stored as individual blocks just like a linked list. Blockchain is a collection of blocks linked together. So, what does each block actually contain? A block is divided into two parts:

Block Head: Holds Metadata

Block Body: Holds information about the transactions.

* *Aniqua Zaki and Anam Danish are students at Jamia Millia Islamia, Delhi*

¹ Satoshi Nakamoto, Bitcoin: A Peer-to-Peer Electronic Cash System, Bitcoin.org (Aug, 29, 2019, 10:04 AM), <https://bitcoin.org/bitcoin.pdf>.

² Ron Miller, IBM unveils blockchain as a service based on open source Hyperledger Fabric Technology, TechCrunch (Aug, 27, 2019, 11: 20 AM), <https://techcrunch.com/2017/03/19/ibm-unveils-blockchain-as-a-service-based-on-open-source-hyperledger-fabric-technology/>

The transactions are further divided into two parts, the first one simply holds information about the purchase, while the second contains a unique digital signature. When a new block is added to the chain, information about the time, the number of the block and by whom was it added becomes public.

WHAT MAKES BLOCKCHAIN DIFFERENT?

Blockchain doesn't follow the typical client-server model instead it has a 'Peer to Peer model' where no central authority exists. This way one cannot alter a data in an old block, thus making blockchain an append-only ledger.³ Elementally, it is a decentralized ledger of information and data.

HOW DOES IT WORK?

Cryptocurrencies like bitcoin or Ethereum are maintained rather than being issued by a central authority. The network of people maintaining them are known as 'miners'. These miners work on complex mathematical problems to ensure each transaction goes through. Each transaction involves a 'public and a private key' so when an individual makes a transaction, in order for it to be acknowledged as one, four things must happen:

- A transaction must occur
- It must be verified
- It must be stored
- Processed by miners

III. DISCERNING INTELLECTUAL PROPERTY RIGHTS

Intellectual Property Rights are rights to intangible things⁴ - to ideas, as expressed (copyrights), or as embodied in a practical implementation (patents). Tom Palmer puts it this way: "Intellectual Property Rights are rights in ideal objects, which are distinguished from the material substrata in

³ Blockchain Foundation Course (Aug, 25, 2019, 08: 50 PM), <https://course.blockchainexpert.uk/lesson/overview/>

⁴ De Lu Vergne Refrigerating Mach. Co. v. Featherstone, 147 U.S. 209, 222, 13 S.Ct. 283, 285 (1893).

which they are instantiated.”⁵ They are a creation of the mind, for example, a technological innovation, a poem, or a design. Intellectual Property Law describes the subject matter of the laws that give rise to proprietary interests in the creations of mind. The principal Intellectual Property Rights which are universally acclaimed are copyrights; which are related to artistic and literary works; patents which are related to pragmatic innovations; and trademarks; pertaining to commercial symbols.

However, the concept of Intellectual Property Rights has been stretched to include industrial designs, trade secrets, plant breeders’ rights, geographical indications, and rights to layout designs of integrated circuits.⁶ Countries establish laws promoting Intellectual Property Rights, to actively encourage creativity making it possible for the right holder to obtain the benefits of their originality.

Over the years the sphere of Intellectual Property Rights has seen various modifications. This, some may regard as a matter of necessity in this developing world. As Victor Hugo once said, “No power on earth can stop an idea whose time has come.” And thus, with the progression of ideas new protective Intellectual Property Rights are being established. New forms of Intellectual Property Rights are on the rise, such as: Data Exclusivity, Orphan Drug Exclusivity, Standard Essential Patents etc.

LIMITATIONS OF INTELLECTUAL PROPERTY RIGHTS

Currently, Intellectual Property Rights are regulated by a centralised authority. These authorities are the government or executive bodies of the geographical area where the right-holder wants to enforce his/her rights. Thus, system is mainly limited by its physical nature. The infringement of these rights gets easier day by day. Intellectual Property Rights are one of those rights which are affected the most by the advent of the internet. Art forgery and fraud are long-established disciplines but, in the internet age, it can be as easy as ‘CTRL+C’.⁷ The physical system is no better with regard to the management of Intellectual Property assets. Moreover, the corporate structure is getting more digitized these days leading to the dwindling of the geographical and physical

⁵ Tom G. Palmer, Are Patents and Copyrights Morally Justified? The Philosophy of Property Rights and Ideal Objects,” in “Symposium: Intellectual Property,” Harvard Journal of Law & Public Policy 13, no. 3 (Summer 1990): 818. As one commentator has noted, “intellectual property may be defined as embracing rights to novel ideas as contained in tangible products of cognitive effort.” Dale A. Nance, “Foreword: Owning Ideas,” in “Symposium: Intellectual Property,” Harvard Journal of Law & Public Policy 13, no. 3 (Summer 1990): 757.

⁶ Hyde William Cornish, Intellectual Property Right (Global Vision Publishing House, Delhi, 1st Ed. 2011).

⁷ Philip Boucher, how blockchain technology could change our lives, European Parliamentary Research services, Scientific Foresight Unit (STOA).

limitations attached to it. Subsequently, blockchain is being considered as a feasible alternative to the 'Physical System'.

IV. IGNITING CHANGE

In 2013, a Manhattan jury found that Agence France-Presse and its American distributor Getty Images wilfully infringed upon Mr. Morel's copyright of eight pictures he took of the 2010 Haiti earthquake and awarded him \$1.22 million.

The thing with digital content is that the buyer may know that they are not getting ownership of any physical artefacts, but what they don't realize is that they are not getting ownership of any digital content either. They enter into a licensing agreement which is valid for a certain period of time. These licenses cannot be sold, given away or even left as a part of an inheritance.

Blockchain technology could be used to manage consumer rights associated with digital products. A ledger containing all our digital media content would be accessible to people after our death to help them remember us by.

The blockchain could be used to register all sales, loans, donations and other such transfers of individual digital artefacts. All transactions are witnessed and agreed by all users. Just like transactions in a bank account or land registry, artefacts cannot be transferred unless they are legitimately owned. Buyers can verify that they are purchasing legitimate copies of MP3s and video files⁸

Blockchain is being used in various Intellectual Property- intensive sectors such as automotive, pharmaceutical, luxury and consumer goods industries. These industries require a system of tracing their goods and blockchain can be a very helpful tool in that regard.

⁸ Timothy Taylor, Blockchain: New Frontiers. Conversable Economist (Aug, 26, 2019, 09:30 AM), <https://conversableeconomist.blogspot.com/2017/08/blockchain-new-frontiers.html>

V. THE POTENTIAL OF BLOCKCHAIN IN THE INTELLECTUAL PROPERTY WORLD

“Disruptive technologies such as Block-chain and the Internet of Things, will have a profound impact on the way we live and work. They will require rapid adaptation in our workplaces”

- Shri Narendra Modi, Hon’ble Prime Minister

Innovation always has and will continue to be the basis of progress and evolution. Blockchain has the potential to significantly support idea generators and those that work with them to create revenues from innovation.⁹ Institutions continue to stumble through extremely long and expensive procedures to protect their ideas, this extensive technology opens multiple portals into a new world of innovation.

Applying Blockchain to an industry that already has proven (albeit often slow) methods will be more challenging. Ultimately Blockchain could be more impactful on the Intellectual Property industry than it has been even to the financial services industries. The challenge will be in creating the right adoption path for the technology.¹⁰

ARTWORK

Blockchain technology can help creators capture the value they create by introducing the concepts of authenticity, condition, and ownership until then missing online.¹¹ Since Blockchain does not require an intermediary and can hold immutable data be it records or proof of ownership, it can be revolutionary in proving chain of ownership and all sorts of transactions. Blockchain could completely remove the need of centralized Intellectual Property registries. Blockchain based records of copyrights may be particularly valuable for protecting works of art, such as images or music. This technology will allow owners to directly track their work maximizing the profits for their work. Conceivably, access to discrete information and data that comprises a trade secret could be monitored and tracked in this manner.¹²

⁹ What role does Blockchain play in the future of IP? Open Access Government (Aug, 29, 2019, 07:15 PM), <https://www.openaccessgovernment.org/blockchain-future-of-ip/57969/>

¹⁰ Toni Nijm, will blockchain fundamentally change IP management? CPA Global (Sept, 01, 2019, 05:30 PM), <https://www.cpaglobal.com/cpa-global-blog/will-blockchain-fundamentally-change-ip-management>

¹¹ <https://www.ascribe.io/> retrieved 19.03.2017

¹² Chinh H. Pham, Barbara A. Jones and Jonathan A. Beckham, Could Blockchain Disrupt How We Protect Our Intellectual Property? Greenberg Traurig (Sept, 01, 2019, 05:35 PM), <https://www.gtlaw-emergingtechnologyviews.com/2018/05/could-blockchain-disrupt-how-we-protect-our-intellectual-property/>

Such detailed records of work provide the artist with a digital certificate of authenticity which can help third parties identify the owner, eventually avoiding infringement.

Blockchain could protect consumers and creators of digital works of all kinds by recording the ownership history of digital property and perhaps even by enforcing digital rights. The transaction history to such artefacts can be traced back to the original owner, the creator. Sometimes this concept of recording digital footprint could be combined with smart contracts which may help lending out digital content for a period of time before being returned to the owner. Being able to see the history of the content would enable the buyer to understand the legitimacy of the artefact they are buying online¹³

PATENTS

Blockchain also steps in, in case of filing patents. Most countries around the globe, have a 'first to file' patent system. Blockchain provides a time stamped facility, where people can easily register and view data. Additionally, once the patent is granted and ownership changes hand, blockchain registers the transaction while simultaneously recording ownership.

SMART CONTRACTS

Another highly promising aspect of blockchain is the smart contract concept. Smart contracts are technically enforced on blockchain instead of the traditional legal enforcement by laws or courts of arbitration. They define the rules and penalties around an agreement and automatically enforce those obligations. Note that the Bitcoin system is not the most powerful environment in that regard and other blockchains introduced later, such as Ethereum, provide better support for it. Ethereum, being turing-complete, makes it possible to specify any functionality specifiable on any other computer making the range of use cases in Intellectual Property and beyond virtually unlimited.¹⁴

Blockchain offers the ability to add functionality through the addition of a “smart contract,” comprised of computer coding added to the blockchain that facilitates the automatic execution and enforcement of contract terms.¹⁵

¹³ How Blockchain Technology can Impact our Daily Lives? Prima Felicitas (Aug, 30, 2019, 09:45 AM), <https://www.primafelicitas.com/blockchain-technology-can-impact-daily-lives/>

¹⁴ Jean-Maxime Rivere, Blockchain technology and Intellectual Property – investigating benefits and acceptance in governments and legislation, *Junior Management Science* 3(1) (2018) 1-15, <https://jums.ub.uni-muenchen.de/JMS/article/view/5006/3167>

¹⁵ Chinh H. Pham, Barbara A. Jones and Jonathan A. Beckham, Could Blockchain Disrupt How We Protect Our Intellectual Property? *Greenberg Traurig* (Sept, 01, 2019, 07:35 PM), <https://www.gtlaw-emergingtechnologyviews.com/2018/05/could-blockchain-disrupt-how-we-protect-our-intellectual-property/>

Smart contracts differ from the traditional Digital Rights Management. Traditional DRM¹⁶ involves various implementations of the same general idea: encrypting content then allowing it to be decrypted only with a key held by a paying customer.¹⁷

DRM has not proved to be sufficient, the security model that the user is provided with is in no way adequate. DRM also tends to challenge notions of ownership. Smart contracts successfully fill in the gaps, generally when you make a micropayment through debit or credit cards it actually costs the individual money. Bitcoin allows the user to directly make a payment. Smart contracts combined with bitcoin opens up new possibilities of effective and efficient user-creator arrangements.

COPYRIGHTS

Copyrights automatically arise upon the creation of a work. This in many ways proves to be beneficial for the creators, but it does create obstacles for artists who wish to see the public benefit from their work while being a part of the public domain.

Until very recently it was not possible for creators to let artists put their work into the public domain that allowed people to use their work freely and safely. There was always a risk that the right holder could claim rights of their work and alleged infringement on the part of the user. This is exactly where blockchain steps in tying creators to their work.¹⁸

TRADEMARKS

The Blockchain Task Force has found that there seem to be at least two immediately applicable uses for the technology (as well as many more potential future uses). The two immediately applicable uses are:

1. Creating blockchain-based records as a more secure and trustworthy record keeping system to prove trademark use; and
2. Proving the provenance and legitimacy of goods in anti-counterfeiting efforts.¹⁹

¹⁶ Digital Rights Management.

¹⁷ Policy Options for Connecting and Enabling the Next Billion – Phase II: Call for Public Input, Association for progressive communications.

¹⁸ Policy Options for Connecting and Enabling the Next Billion – Phase II: Call for Public Input, Association for progressive communications.

¹⁹ Bennett Collen, Phil Lodico, Dorna Mohaghegh and Bárbara Porcario, Applications of Blockchain Technology to Trademark Protection, Enforcement, and Practice, International Trademarks Association (Aug. 31, 2019, 12:40 PM), <https://www.inta.org/INTABulletin/Pages/ApplicationsofBlockchainTechnologytoTrademarkProtection7312.aspx>

VI. BLOCKCHAIN REGISTRY CASE STUDY: ASCRIBE

Ascribe a company based in Berlin, decided to use blockchain to help protect artists' Intellectual Property. The study in brief found that by allowing stigmergy processes, the blockchain approach to innovation mobilized collective intelligence while introducing a spirit of sharing and pooled contributions of community members. It successfully managed reputations of members eventually invigorating a sense of healthy competition.

VII. LEGISLATIVE AND INSTITUTIONAL SUPPORT IN INDIA

State Bank of India (SBI) is working towards a safer, more secure banking system in India through its implementation of blockchain solutions with BankChain and Intel. BankChain is a community of banks in India formed to explore, build and implement blockchain solutions. SBI is a founding member of BankChain, which now has 27 members in India and the Middle East.²⁰

General insurance companies also worked on a pilot to track health insurance policies using blockchain. Andhra Pradesh is the first state in the country to introduce blockchain in land records and is also setting up a Blockchain Centre of Excellence to set up the country's first Blockchain state. Other states like Maharashtra, Karnataka, Kerala and Rajasthan are following the lead.²¹

A private sector bank in India and a leading banking group in the Middle East successfully executed transactions in international trade finance and remittance using blockchain.²²

National Stock Exchange of India is exploring blockchain for management of KYC documents in collaboration with some of the leading banks in India.²³

The Finance Minister in his Union Budget 2018 speech said, "The government does not consider cryptocurrencies legal tender or coin and will take all measures to eliminate the use of these crypto-assets in financing illegitimate activities or as part of the payment system." However, the government has recognized blockchain and said that a "distributed ledger system or the blockchain technology allows organization of any chain of records or transactions, without the need of

²⁰ State Bank of India partners with BankChain and Intel to deploy blockchain solutions, The Economic times, November 01, 2017.

²¹ Megha Mehdiratta, Implementing Blockchain in India, Invest India (Sept, 03, 2019, 01:20 PM), <https://www.investindia.gov.in/team-india-blogs/implementing-blockchain-india>.

²²<https://www.icicibank.com/aboutus/article.page?identifier=news-icici-bank-executes-indias-first-banking-transactions-on-blockchain-in-partnership-withemiratesnbd-20161210162515562>

²³<http://computer.expressbpd.com/news/nse-looking-at-blockchain-for-ensuring-settlement-guarantees/18956/>

intermediaries. The government will explore use of blockchain technology proactively for ushering in digital economy.”

Axis Bank and Kotak Mahindra, two of the private sector banks in India are jointly testing Blockchain transactions focused mostly on cross-border remittance & trade settlement.²⁴

NITI Aayog has taken initiative on Blockchain usages in E-governance and has conceptualized the tech stack as 'IndiaChain'. IndiaChain is the name given to NITI Aayog's ambitious project to develop a nation-wide blockchain network. "Artificial intelligence, machine learning, Internet of Things, blockchain and big data hold potential to take India to new heights," Prime Minister Narendra Modi said at the world economic forum. The vision is to link IndiaChain with IndiaStack, the digital infrastructure that forms the backbone of the Aadhar project.²⁵ The NITI Aayog initiative on the blockchain system will enforce contracts quicker, prevent fraudulent transactions, and help farmers through the efficient disbursement of subsidies. This project is the first step to a larger system of record keeping and public good disbursement.²⁶

As per data from the World Intellectual Property Organization, India stands sixth on the list of patents and trends in the blockchain space, with a total of 67 patents approval in 2018.

The Supreme Court of India in a judgement on 4th march, 2020 lifted the curbs imposed by the Reserve Bank of India on regulated entities such as banks and NBFCs²⁷ from dealing with virtual currencies and from providing services to crypto businesses. The Court held that the RBI's circular, which prevented regulated entities from providing banking services to those engaged in the trading or facilitating in Virtual Currencies, was liable to be set aside on grounds of proportionality.²⁸

²⁴ Vishwanath Nair, Axis, Kotak Mahindra banks test blockchain transactions, Live Mint (Aug, 29, 2019, 09:13 PM), <https://www.livemint.com/Industry/loztj0R98Ea6m58Ng8jUzM/Blockchain-technology-catches-Axis-Kotak-Mahindras-fancy.html>.

²⁵ "IndiaChain: India's ambitious blockchain project - The Indian Economist, Daily Hunt."

²⁶ "What is IndiaChain: a blockchain system that could soon be the heart of governance in India?". Business Insider.

²⁷ Non-banking Financial Companies.

²⁸ NETWORK, LIVELAW NEWS. "[Updated] SC Quashes RBI Ban on Banking Services to Cryptocurrency Dealers [Read Judgment]." www.livelaw.in, 4 Mar. 2020, www.livelaw.in/top-stories/breaking-sc-quashes-reserve-bank-of-indias-ban-on-cryptocurrency-153427?infinitemscroll=1. Accessed 5 Mar. 2020.

VIII. RECOMMENDATIONS

We have reached a new era in the world of Intellectual Property Rights where entirely new forms of partnerships and productions keep emerging that permit people from all over the world to work together peacefully. In our opinion blockchain as a technology can be used by business and entrepreneurs to protect their most valuable assets.

Blockchain proves itself to be the ultimate solution by providing:

1. Secure content ledgers connecting creators to their works
2. Reliable decentralized content registries that can't lose data and is insusceptible to censorship of any kind.
3. Continuous payments to creators each time their work is used
4. Automated smart contracts for licensing as well as sales

The technology is not without its drawbacks:

1. The immutable data raises questions of privacy.
2. The decentralized registries which are insusceptible to censorship result in toxic content like child pornography remaining online.
3. Micro-payments might limit access to people with the ability to pay ultimately leading to a negative flux in content creation.
4. Impossible to correct incorrect information added at the time of data entry.

After careful consideration the obvious conclusion is that with meticulous planning blockchain can be applied in a way that mitigates risk and creates a safe as well as an ethical platform.

Effectively aggrandizing the scope and application of Intellectual Property Rights.

IX. REFERENCES

- Rattan, Jyoti (2017). *Trips and international intellectual property protection in age of internet technology a legal study* [Online]. Shodhganga@INFLIBNET. Available at: <http://hdl.handle.net/10603/210115> (Accessed: 27 August 2019).
- Estrin, James (2013). *Haitian Photographer Wins Major U.S. Copyright Victory* [Online]. The New York Times. Available at: <https://lens.blogs.nytimes.com/2013/11/23/haitian-photographer-wins-major-u-s-copyright-victory/> (Accessed: 29 August 2019).
- Clark, Birgit and McKenzie, Baker (2018). *Blockchain and IP Law: A Match made in Crypto Heaven?* [Online]. WIPO (World Intellectual Property Organization). Available at: https://www.wipo.int/wipo_magazine/en/2018/01/article_0005.html (Accessed: 01 September 2019).
- Vivina Viswanathan (2018). *Cryptocurrency not legal tender in India, but blockchain gets new life in Budget 2018* [Online]. live Mint. Available at: <https://www.livemint.com/Money/o4bSQ6CiUfjCIWDFDyZjnJ/Cryptocurrency-not-legal-tender-in-India-but-blockchain-get.html> (Accessed: 03 September 2019).
- Blockchain technology in India: Opportunities and challenges (2017), <https://www2.deloitte.com/content/dam/Deloitte/in/Documents/strategy/in-strategy-innovation-blockchain-technology-india-opportunities-challenges-noexp.pdf> (Accessed: 28 August 2019).
- Saurabh Singla (2019). *How Blockchain Could Be A Game Changer in India* [Online]. Inc42. Available at: <https://inc42.com/resources/how-blockchain-could-be-a-game-changer-in-india/> (Accessed: 29 august 2019).