

# Chains of books and blocks

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## **Abstract:**

Apart from a few experts and experiments, blockchain technology is still a matter of promises about the new uses stemming from its purported characteristics: its being open but unfalsifiable and its being reliable even in the absence of a trusted third party. The book market could improve the efficiency of its digital activities if this technology were to keep its promise of being an inviolable register, a secure means for transferring files, or even an automatic machine for authorizing, controlling and collecting royalties. For it to be as revolutionary as announcements of it have claimed, it must keep its farthest reaching promise, namely: being a peer-to-peer tool at everyone's service instead of a toy in the hand of new monopolistic intermediaries.

Have the book industry and blockchain technology chanced to meet?<sup>1</sup> For sure. But at the time of writing, their meeting has occurred in a dog-eared medium, not at all revolutionary or disruptive. For the time being, the best way to broach any new technology is, without a doubt, to read a good book on the subject.<sup>2</sup> As for the “book chain”, this leading cultural industry in France has not yet linked up with blockchains, nor even imagined doing so.

Blockchain technology, still immature and very complex (to borrow from Philippe Rodriguez<sup>2</sup>), appears — to anyone not into mathematics, computer science or cryptography — in the guise of the relatively long-run promises and claims made for it, rather than in the overalls of a very precise understanding of how it is now operating or can be made operational (a privy topic, except for bitcoins).

This short article will prospect the field by contrasting a blockchain's promises (I am incapable of validating how robust they are) with the actual situation in the book industry, which is very similar to that in the cultural and entertainment industry in general. After describing what blockchain technology could lead to in this industry, I shall examine whether its uses are promising opportunities or, on the contrary, a disruption (and for whom).

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<sup>1</sup> This article has been translated from French by Noal Mellott (Omaha Beach, France). The translation into English has, with the editor's approval, completed a few references.

<sup>2</sup> To cite two very recent ones in French: PHILIPPE RODRIGUEZ, *La Révolution blockchain. Algorithmes ou institutions, à qui donnerez-vous votre confiance?* (Paris: Dunod) March 2017; & BLOCKCHAIN FRANCE, *La Blockchain décryptée. Les clés d'une révolution* (Paris: Observatoire Netexplo), May 2016. The latter is available at: [https://www.iddlab.org/community/action/file/download?file\\_guid=32614](https://www.iddlab.org/community/action/file/download?file_guid=32614).

## The book chain and the announced uses of blockchains

Based on computer science and cryptography, and on the nearly mythical protocol at its origins in 2008, the purely technical definition of a blockchain can be assimilated only by experts. Leaving the technical sphere, we need a definition with words that carry meaning in our common world. The concept of the blockchain has been broken down as: ledger / shared / unforgeable / indestructible / open / made up of blocks that are successively validated, dated and stored in chronological order.<sup>3</sup>

Agreed, but what can it be used for? The snappy answer: “For bitcoins, that’s how they operate!” The best (only?) somewhat tangible blockchain application is bitcoins, a cryptographic currency that operates by itself, without any government as a third party who issues banknotes. Money? That’s concrete! But virtual money? Ah...

Eureka! *A* wants to give a bitcoin (BTC) to *B*. Through the blockchain’s magic, a calculator is going to decipher the transaction’s components in order to validate it; and a “community” of other calculators is going to attest this validity. The operation, once validated, will be placed in the chain, sealed inside a block, which anyone may freely consult.

So, it’s for generating confidence: confidence about the original ownership by *A*, confidence in the existence of a transaction from *A* to *B*; and confidence about the new ownership by *B*. This confidence is validated not by a single third party who exercises a monopoly over certification but, instead, via a “decentralized consensus”. So, a blockchain is “distributed confidence”, to borrow a recent book’s title.<sup>4</sup>

This example has not fully lifted the conceptual fog. Discussions of blockchains very quickly turn toward the uses which this technology claims to bear. In the culture and entertainment industry (and, potentially, the book industry too), these uses normally hinge on three aspects: 1) a ledger for copyrights; 2) a medium for circulating e-books; and 3) the automated, customized management of royalties.

### A register for copyrights

Blockchains are also called distributed ledger technology (DLT) — a ledger/register that, open for consultation and new entries, cannot be falsified thanks to the procedure for reaching a decentralized consensus on validating entries.

It has been announced that blockchains will be used to equip Ghana or Georgia with a real estate registry. A blockchain will attest land ownership in an open register, which is easy to access and consult but impossible to falsify. The register itself is proof of ownership, of a date of change of ownership, of a series of rights.

Another application proposed for a blockchain ledger has to do with traceability and certification. The start-up Everledger is busy building an electronic register to list transactions in the diamond business for the purpose of countering theft and fraud. To register a diamond, it has to be assigned a serial number, which will be both micro-engraved on the gem and recorded on the blockchain.

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<sup>3</sup> See: JEAN-PAUL DELAHAYE “Qu’est-ce qu’une blockchain?”, post of 11 October 2017 on: <http://www.scilogs.fr/complexites/quest-quune-blockchain/>

<sup>4</sup> A blockchain is, in a way, “distributed confidence” with reference to the title of a recent book: Y. CASEAU & S. SUDOPLATOFF, “La Blockchain, ou la confiance distribuée”, 52p. (Paris: Fondation pour l’Innovation Politique) June 2016. Available at <http://www.fondapol.org/wp-content/uploads/2016/06/083-SUDOPLATOF-2016-05-26-webDEF.pdf>.

As proof of origin, of date and of ownership, a blockchain register could interest the entertainment industry, where assets are, in essence, immaterial — even more so now that they rely increasingly on digital media (MP3 files, ePUB, etc.). The music industry is already giving thought to a big blockchain database for keeping track of copyrights. A piece of music contains at least two copyrights: one for the sound, the other for the composition. As the website of Blockchain France explains, *“proof of the existence and ownership of these two copyrights could be stored on the blockchain [... which would] allow for recording, without falsification, the ownership of each title and the corresponding copyrights.”*<sup>5</sup>

In the book world, this chain of rights is not so splintered as in music; and publishers normally receive all receipts generated by the uses of the books they have published. Their responsibility is to share these receipts among contributors: the author, translator, illustrator, photographer, etc. The number of rights protecting a book is less problematic for the written word than for the sound of music.

It would be worthwhile to have an unfalsifiable register to which a multitude of persons contribute: a centralized register of French authors (like the Balzac file of the Société des Gens de Lettres) or a register of the works themselves. Without any risk of forgery, anyone who needs to know about an author’s life or writings could make an entry in this register. Contributors could be: publishing houses (as they bring out new editions or versions), the official depository (in France the BNF: Bibliothèque Nationale de France), the attorneys, agents or notaries who manage an author’s estate, the authors themselves when they change addresses, etc.

Recent programs for digitizing legacy collections have all encountered the same problems. How to locate the authors of books published several decades ago or, even harder, their heirs? How to make up for gaps in a book’s metadata? Given the absence of a repertory, the advocates of universal, for-free access to knowledge have had it easy to argue that, since the persons holding rights to a work cannot be identified, vast exemptions should be authorized from copyright law.

## A medium for diffusing e-books

For several years now, books have been published in an electronic format as well as on paper. The digital versions are sold on big e-book platforms and on the websites of neighborhood bookstores. The sales are similar to sales for printed books: in exchange for an on-line payment, customers download files that then belong to them.

This analogy falls short however. An e-book may not be loaned or resold. Talk about “transferring” or “transmitting” electronic files is an outright misuse of language. The transfer or transmission is always a REPRODUCTION of the original file, a copy sent to a third party while the original file is kept. Every time this happens is an act of piracy! Techniques of protection prevent reproducing the file, save for reading on screens of various sorts, which the buyer of an e-book is authorized to do.

With the promised blockchain technology, the analogy can apparently be deepened. In a Bitcoin type of blockchain, property is relinquished: the bitcoin transferred from *A* to *B* no longer belongs to *A*; it becomes *B*’s property. This operation is irreversible, sealed in the blockchain. The bitcoin has, we might say, its own identification. Were an e-book (instead of a bitcoin) to be transferred however, we could say that the “same” book is circulating; so copying it is not an act of counterfeiting. To extrapolate beyond the book industry, we might conclude that blockchains open the possibility of real — unique — “electronic goods”. However this article is not the place to explore these prospects.

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<sup>5</sup> <https://blockchainfrance.net/2016/12/09/la-blockchain-sauvera-t-elle-lindustrie-musicale/>

For publishing houses, suffice it to say that blockchain technology bears as many promises as threats. An e-book circulating via a blockchain as an individually identified entity would represent a “user experience” to its owner similar to the experience procured by a physical book: access to it would last longer and be more interoperable, whatever the environment for reading or conserving it. This would, owing to traceability via the blockchain, make it easier to protect the book against counterfeiting. This propinquity with physical books would, however, open the door for dangerous concepts from the physical world to enter the digital economy: the extinction of rights following the first sale of the file, the resale of secondhand book files, etc.

## The automated, customized management of royalties

At the forefront of blockchain technology, there is a buzz about the nearly mechanical magic of smart contracts, described as autonomous programs that automatically execute under predefined conditions. In other words, an e-book file could, if coupled with a cryptocurrency payment system, include all the following:

- its conditions of use (individual reading, library loans, reproduction for teaching purposes, adaptation to an audio format, etc);
- immediate payment at time of use of any fees and royalties (as a function of the type of use);
- instantaneous expedition of royalties, etc., to: authors, illustrators, publishers, copyright collection organizations, etc.

These self-executing smart contracts would individualize, customize, optimize the price and sales conditions as a function of how each e-book is used, and would speed up the collection of royalties.

## Predicted disruptions in the book industry: Opportunities and risks

There is no article on this topic, nor any lecture about it, that does not justify blockchain technology by referring to its deeply disruptive nature.

As already stated, this technology is still more a matter of the promises it makes than of any concrete realization. These promises ring like an incantation: blockchains are capable of endowing each economic agent (firms, customers, users, citizens, etc.) on the Internet with an autonomy and control that the agent still lacks: since the creation of the Web, the never attained paradise of peer-to-peer relations. What this incantation says about reality ultimately has to do with the opportunities and risks for the chain of production and consumption in the book industry.

Blockchain technology could serve to identify and transfer e-books, as if they were physical books. As a register that cannot be forged, that is public, that does not involve a centralizing third party, that has the ability to manage automatically executed contracts, a blockchain could turn more control over their creations to authors and publishers:

- a direct management, without any intermediary, of sales and marketing (the distribution platform) or of royalties (collection organizations), while better familiarizing us with readers, their characteristics and practices.
- a finely honed management of the rights associated with an e-book by type of use and of customer.
- shorter payment channels.
- perfect traceability of the digital goods circulating on the web, thus making it easier to prevent unlawful reproductions.

The rhetoric about blockchains postulates that the technological model underlying this revolution is robust. Were this postulate to turn out to be excessively optimistic, the following risks would ensue:

- for the FALSIFICATION of data. A blockchain relies on a consensus procedure based, in turn, on majority rule (in terms of computing power). If 51% of this power is necessary to validate a transaction, the same 51% will *a priori* be able to void a transaction.
- with regard to DUPLICATION. A blockchain reproduces disparate data and disseminates them over all servers on the planet. This makes it hard to apprehend someone responsible for perpetrating an unlawful act.
- for DECENTRALIZATION. A blockchain's main promise is to ultimately eliminate middlemen. This could jeopardize publishing houses since they are intermediaries between authors and readers. They might be eliminated along with the other intermediaries (distributors and bookstores). As a result, authors would be left to manage the use of their books, to distribute and invoice them directly via the blockchain. Let us not forget, however, that a publisher's first task is to select manuscripts, help prepare them for publication and then promote the published works so that they stand out among the high piles of books proposed to readers in the market.

Lurking within this "disintermediation" is, in my opinion, a much bigger danger: a fake promise that keeps us from perceiving the role of the economic superpowers who are imposing their requirements on all other economic agents who are being forced to enter the channels under their control. In fact, blockchain technology, as it eliminates (perhaps) certain intermediaries, is creating others: the "nodes" (the system's ratchets that are paid for their work on the chain), the platforms for cryptocurrency transactions, the parties who hold the certified information needed to trigger smart contracts and, above all, the inventors of interfaces between encrypted blockchains and ordinary users — in like manner as the Web, by coming in between users and the Internet, made it possible for the Internet to be more widely used but with, as a counterpart, the recourse to browsers, which now hold planetary monopolies.