The Blockchain Revolution

Is it a revolt? No, your Majesty, it is a revolution.

An exceptionally quiet and warm night – thought Louis seated in front of an old oak table covered with dozens of gold coins. Recently, he had not had much time to sit in silence and immerse himself in studying his favourite objects: coins. It would be much easier to be a simple banker, he sighed. The silence in the chamber was disturbed for a moment. His complaint was finally absorbed by the Persian carpet that lay proudly on the old floor. Obviously, there were thoughts and worries running through the monarch's head but he did not pay much attention to them. Problems are born out of thinking – he thought. He could not understand people – those strange creatures were a real mystery to him. The world turns too fast – let's focus on coins, solid objects that, unlike humans and their ideas, are predictable and easy to inspect.

Even though the night was calm and very warm, anxiety hovered in the air. Something was supposed to happen, something was lurking in the darkness waiting patiently to reveal its face.

Then, the heavily-decorated doors flew open with a tumultuous bang. The silver moon shone on the red, frightened face of the figure that had sneaked, unauthorized, into Louis's private kingdom: “My Lord…the Bastille demolished” – said the figure, who turned out to be the Duke of Rochefoucauld.

“C'est une révolte?”

1 s this a revolt? No, Sire, it is a revolution – the famous words that King Louis XVI and the Duke of Rochefoucauld exchanged just after the people of Paris took the Bastille.

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* The views expressed herein are those of the author and do not necessarily reflect those of the Organization he is affiliated to.

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asked – he was tired of those people and their ridiculous demands. Rebels are just part of the way things are – he thought - I will not think about it now, I will think about it tomorrow.

“Non, Sire, c’est une révolution” – the Duke answered and silence followed…

An unusual way to start an intellectual discourse on blockchain, one could say. Two-hundred and twenty-seven years and 92 days after the famous fortress of Bastille was demolished I could not resist the temptation to refer to that famous conversation between Louis XVI and the Duke of Rochefoucauld. The analogy seemed compelling. Given that, we might ask ourselves: Is blockchain a minor revolt or is it a new Great Revolution set to reshape the world as we know it? If the latter is the case, will there be any ethical impact? Will such a revolution be ethical in its essence? Whatever the answers to those questions, we should not underestimate the wind of change in the way that Louis XVI once did. What we now might perceive as an evolution, or as a mere revolt, might turn out to be a storm, a revolution redefining finance and/or ethics.

How does blockchain work?

The concept of blockchain is similar to that of a database – it permanently records transactions in a manner that cannot be later deleted or manipulated and can only be sequentially updated. It contains a record of all transactions that have ever been completed on it, creating a never-ending historical trail (Mougayar, 2016).

The technology is based on a chain of ‘blocks’ where each block groups together individual transactions once they have been validated. Each block is added to the chain through the process of “mining” and, once added, the transactions within the block are considered valid. Since new blocks are confirmed based on the previous block’s information, the more blocks that have been added to an existing block, the more a transaction within that block has received confirmation. In order to keep the ledger consistent, any newly created block is broadcast across the network for everyone to see.

Each successive block contains a unique fingerprint (“hash”) of the previous code, thus cryptography (via hash codes) secures the authentication of the transaction source and eliminates the need for a central intermediary (Mougayar, 2015). Addresses and signatures are created with the use of private/public key generation. They can only be produced by a private key holder and be verified by anyone seeing a public key, therefore only the private key holder is able to complete a transaction successfully. “It’s a bit like your home address. You can publish your home address publicly, but that doesn’t give any information about what your home looks like on
est ajouté à la chaîne à travers le processus de « minage » qui permet de valider les transactions à l’intérieur du bloc. Afin de garantir la cohérence du registre, tout bloc nouvellement créé est diffusé sur tout le réseau de façon à ce que chacun puisse le voir. Chaque bloc successif contient une empreinte unique (« hash ») du code précédent ; ainsi, la cryptographie (à travers les codes hash) garantit l’authentification de la source de la transaction et élimine le besoin d’un intermédiaire central.

The inside. You’ll need your private key to enter your private home, and since you have claimed that address as yours, no one else can claim the same address as theirs.” (Mougayar, 2015).

**Wind of change**

Blockchain technology is definitely making headlines in newspapers covering many sectors: IT, music, healthcare, politics, law, and social life, to name just a few. The feeling of a breakthrough is almost tangible. Conferences, publications, new impressive ideas and dozens of solemn phrases about blockchain are present in almost every field. For those outside the race, it might look as if blockchain technology is a secret panacea for the world’s problems: hunger, economic exclusion, environmental and human exploitation, government abuse, democracy deficit and so on (Meunier, 2017). Is that all? What is there for the financial world, if anything at all?

Those who try to keep up to date with blockchain news will soon realise that the blockchain storm is far from being unnoticed by large financial players. UBS, BNP Paribas, Santander, Société Générale, Euroclear and many other financial institutions have made significant investments in order to harness, rather than hinder, the technology – to use it for financial purposes (IBM, 2015). At the same time, blockchain has the potential to severely impact wide swathes of the financial services industry. Potentially, it could leave its fingerprint on almost all layers of the market, starting with capital raising, through trading, clearing and settlement, ending with record-keeping.

This is already happening. NASDAQ – using Linq – enabled the first-ever blockchain-documentated private securities issuance (Nasdaq, 2015). More recently, in January 2017, SWIFT announced its launch of a proof of concept to explore whether distributed ledger technology (DLT) can be used by banks to improve the reconciliation of their nostro databases in real time, thus optimising their global liquidity. (Ninety banks representing more than 75% of SWIFT’s cross-border payment traffic are authorised to participate in this PoC (SWIFT, 2017)). In January 2016, the Australian Stock Exchange announced that it was building a blockchain as a replacement for its current platform for the clearing and settlement of trades (CryptoCoinsNews, 2016).

These are only a few examples, there are more and definitely more to come. The sector is sensing the potential and constantly expanding its knowledge of this ill-understood technology. According to a Deloitte report, 61% of senior executives surveyed claimed to have broad or expert knowledge of DLT, 42% believed it will disrupt their industry and 55% of them said they will lose competitiveness if they don’t adopt

**THE BLOCKCHAIN REVOLUTION**
La technologie a suscité de grands espoirs car elle était censée remédier à de nombreux problèmes économiques et sociaux. Cependant, nous nous sommes rapidement rendu compte que, bien qu'internet se soit avéré un excellent moyen de communication, il n'a non seulement pas permis d'éradiquer de graves problèmes mondiaux mais il a contribué de manière considérable au développement d'autres phénomènes hautement indésirables.

The Internet of Value

It began with the Internet and it was good. Great expectations were vested in the technology that, it was hoped, would cure many social and economic ills. We realised quickly that, even though the Internet turned out to be a great means of communication, it not only failed to eradicate serious global problems, but significantly contributed to the development of other highly undesirable phenomena.

It was meant to enable the social and economic inclusion of billions of people, but that remained a pipe dream. The Internet had a great impact on all aspects of life – it has changed our perception of the economy and finance – yet the technology did not make financial intermediaries evaporate. Instead, it was consumed by them and utilised for their own purposes (e.g. Internet banking).

The Internet triggered a lot of problems around privacy rights. It also became a weapon in the hands of criminals involved in illicit activities (pornography, money laundering, cyber-attacks, piracy etc.). It turned out to be a way of conducting a brand new type of 21st century war: a war of disinformation. We now lead two lives, the physical one and the one where our virtual equivalent leaves its trace online. This trace can be followed. The information might be collected for a number of purposes (both political and commercial) and we might not have any idea that it is happening. This Internet is the Internet of Information, information that is spread across the Web, uncontrolled by data subjects. It definitely has some value but is not value itself. The technology that is sometimes referred to as the Second Era of the Internet: distributed ledger technology (DLT) or its sub-category, blockchain (terms often used interchangeably), is supposed to address the aforementioned issues – it is said to transform the Internet of Information into the Internet of Value (Tapscott, A., 2016).

Emergence of the technology

The most fundamental problem with the Internet of Information is connected to the issue of so-called “double-spending”. If one posts a photo on the Web or sends it to someone, one is not deprived of the ownership of it. Once a photo is posted on the Internet anyone can download it – the same photo can be sent an infinite number of times. The question is, how can we get back to
Internet a créé beau-
coup de problèmes
autour des droits à la
vie privée. Il est aussi
devenu une arme pour
les criminels impliqués
dans des activités illi-
cites et s’est avéré être
un moyen de mener un
tout nouveau genre de
guerre au 21e siècle :
les guerres de désinfor-
mation. La technologie
du registre distribué
(DLT) ou sa sous-
catégorie blockchain
(termes souvent uti-
lisés de façon inter-
changeable) est parfois
vue comme la seconde
ère d’internet. Elle est
censée répondre aux
préoccupations sus-
mentionnées et ainsi
transformer l’internet
de l’information en
l’internet de la valeur.

Le problème le plus
fondamental avec
l’internet de l’informa-
tion est lié au problème
dit de la « double
dépense ». Si une per-
sonne doit envoyer de
l’argent numérique via
le réseau, le destina-
taire visé et les autres
internautes doivent
tre sûrs qu’il/elle
est effectivement en
possession de l’argent
envoyé. Le concept de
chaîne de blocs est une

the old good days, where the physical
transfer of assets (such as photos or
CDs) meant that one relinquished
ownership. In this case, that would
be the ownership of a digital asset.
This issue was identified primarily
in relation to digital money. If one
is supposed to send digital money
via the network, both the intended
recipient and remaining web users
need to be sure he/she actually owns
the money sent (Nielsen, 2013).
The concept of blockchain is a
solution to that problem. It follows
the idea first proposed in 2009
in a white paper by the mysterious
Satoshi Nakamoto (a programmer
or a group of programmers), whose
true identity has never been revealed.

Nakamto’s idea constitutes
an underlying scheme for Bitcoin
– a cryptocurrency and a payment
system based on DLT. The currency
itself – Bitcoin – takes the form of
an address that is a sequence of
bits that can be stored in a “wallet”
(a computer programme). Unlike
government-issued money that
can be inflated at will, the supply
of Bitcoin is mathematically linked
to twenty one million bitcoins and
that can never be changed. A bitcoin
holder is anonymous unless the
Bitcoin address can be associated with
a wallet and a wallet with a person.
Bitcoin transactions take place on
the bitcoin network that is open
to everyone (unrestricted distributed
ledger). In order to perform
a transaction, a bitcoin owner sends
a message along with a signature
over the network specifying that
cryptocurrency is being sent to a new
address. All network participants can
verify that transactions are legitimate
since addresses associated with
unspent bitcoins can be identified
in a stored ledger or validated by
the entire network. That ledger (a
set of accounts) is itself a database
spread across multiple sites (a
shared database) – and it is called
blockchain. The bitcoin blockchain
is operated by a decentralised
authority not a centralized authority
as in the case of government-issued
currencies. The participants transact
with each other directly without the
involvement of any intermediary.
Physical bitcoins do not exist –
they exist only virtually as balances
associated with public and private
keys (Koeppl & Kronick, 2017).

Bitcoin’s early history is
shrouded in controversies (Bitstamp
– $5 million loss, Silk Route
– $200 million of anonymous online
drug sales using bitcoins, Hong
Kong’s Mycoin and a fraud of at
least $21.8 million after the bitcoin
trading platform suddenly collapsed
(Cryptocity, 2015)). Exchange
heists, stolen wallets, mysterious
bankruptcies and missing CEOs
eroded the image of the technology
and quickly many ethical concerns
arose. The question emerged – is a
technology that is surrounded by
scandals regarding its illegal and
unethical use in its early stages able
to address the ethical issues it was
aimed to eliminate? Is the medicine
more dangerous than the disease
itself?

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Negative publicity and conceptual confusion laid the ground for people to begin to refer to the underlying technology of bitcoin – blockchain – as the real innovation coming out of the bitcoin phenomenon (Allcoin, 2017). It has been realised that even though bitcoin might not revolutionise the world, its underlying technology can.

**Ethical application of DLT**

Distributed ledger technology might be an impressive catalyst for a whole range of applications that will promote ethics or address unethical activities both in the financial sector and beyond. This technology could enable the inclusion of billions of people into the economy, especially those who, for whatever reason, don’t have a bank account (e.g. widespread use of mobile phones for payments in Africa partially replacing the need for having a bank account). The blockchain might create a true sharing economy by providing lending rooms (participants lending and borrowing among themselves without any middlemen) that could help address the problem of inequality and unfair distribution of wealth. The significant cost reduction (potential to reduce infrastructure cost by up to $20 billion a year (IBM, 2015)) may once and for all end the remittance rip-off (transaction costs ranging from 0% to 3%). The forgotten idealistic dreams of the direct democracy where voters supervise their representatives and are given back the control over their lives might be possible now as DLT could help to reinvent the government (European Parliament, 2016). Further, two big ethical nightmares of the Internet of Information might be finally addressed. Firstly, blockchain could enable citizens to own and manage their data and protect privacy. In this regard, data would be treated as an asset class and be given back to data subjects. Secondly, the technology has the potential to finally enable an author to command fair compensation for creative work and to protect their intellectual property rights (Tapscott, D., 2016). Imagine a song that has a smart contract attached to it and manages itself. Each time the song is used for a commercial purpose, viewed or downloaded as a ring tone, it executes a contract thanks to protocols encoded in it. This is not fiction, this is already happening (Imogen Heap – a British singer has already put her music on a blockchain (Mycelia, 2017)). As the blockchain technology removes the problem of double-spending, digital assets such as music can now be traded on the secondary market as old CDs used to be – without the risk of being copied an infinite number of times.

Another possible application is record-keeping. It has been estimated that approximately 70% of people worldwide who hold a piece of land do not have a valid title to it (Tapscott, A., 2016). This is a serious economic blocking factor. Those
La technologie DLT pourrait être un catalyseur impressionnant pour toute une série d’applications qui contribueront à promouvoir l’éthique ou à résoudre des problèmes liés à des activités contraires à l’éthique dans le secteur financier et au-delà. La technologie pourrait permettre l’inclusion de milliards de personnes dans l’économie, en particulier ceux qui, pour une raison quelconque, n’ont pas de compte bancaire. Blockchain pourrait créer une véritable économie du partage et contribuer à résoudre le problème de l’inégalité et de la répartition inéquitable des richesses. En outre, deux grands cauchemars éthiques de l’internet de l’information pourraient finalement être éliminés. Premièrement, Blockchain pourrait permettre aux citoyens de détenir et de gérer leurs données tout en protégeant leur vie privée. Deuxièmement, la technologie peut potentiellement permettre enfin à un auteur de recevoir une rémunération équitable pour son travail créatif et de protéger ses droits de “squatters” cannot borrow money against their invalid titles, which slows down the economy as a whole. Blockchain might solve this issue thanks to immutable records that cannot be tampered with by any central government or individual. Under the new technology, there could be a full record of ownership starting with the point in time when an asset was “issued” to the network. This could finally enable fair trade as there is an impact on the supply chain. Each blockchain user would have the possibility to verify whether a given product was produced in ethical conditions, whether workers were fairly compensated for their work and who will be a beneficial owner of proceeds from a transaction (making sure they don’t support individuals or governments violating human rights, laws, destroying the environment). Furthermore, easier traceability of funds might constitute a serious obstacle for criminal activities such as fraud or money laundering.

All indicated ethical applications of blockchain are not abstract concepts, some of them are already operational such as Everledger – a global, digital ledger that tracks and protects valuable assets (e.g. diamonds) throughout their lifetime journey. An asset’s defining characteristics, history, and ownership are collected to create a permanent record on the blockchain. This digital thumbprint is then used by various stakeholders across a supply chain to form provenance and verify authenticity (Everledger, 2017). All the aforementioned potential applications of DLT might enable or at least improve transparency, ethical trade, and contribute to a healthy economy based on ethical foundations.

**Ethical Revolution?**

William Mougayar in his 2016 book: *The business blockchain: promise, practice, and application of the next internet technology* states that blockchain: “Is making us rethink the old ways of creating transactions, storing data, and moving assets, and that’s only the beginning. Blockchain cannot be described just as a revolution. It is a tsunami-like phenomenon, slowly advancing and gradually enveloping everything along its way by the force of its progression… Blockchains are enormous catalysts for change that affect governance, ways of life, traditional corporate models, society and global institutions” (p. XXI). This change entails many ethical issues that should be addressed or at least discussed before the technology is fully adopted. Is blockchain a revolution? It might be the case though that is yet to be seen. We might further ask ourselves whether this potential revolution is ethical. We might even broaden the scope of the question and ask whether any revolution – especially a technological one – has ethics built into its DNA. We should not forget that each revolution has also
propriété intellectuelle. Une autre application possible est la tenue de registres. Selon les estimations, environ 70% des personnes dans le monde qui possèdent une parcelle de terre n’ont pas de titre valable.

De telles applications éthiques de Blockchain sont pas des concepts abstraits, certaines d’entre elles étant déjà opérationnelles. Toutes les applications potentielles susmentionnées de la technologie du registre distribué (DLT) pourraient permettre ou au moins améliorer la transparence, le commerce équitable et contribuer à une économie saine fondée sur des bases éthiques.

Blockchain est-elle une révolution ? Cela pourrait être le cas, quoique cela reste à voir. Nous pourrions, en outre, nous demander si l’éthique est inscrite dans son ADN. L’éthique sous-jacente a un unethical face – the face of those who have been left behind, the face of those who will not embrace the technology and so will miss the innovation train, the face of winners and losers.

Ethics stands behind the values for which blockchain technology was created: depriving centrally-owned intermediaries of control over individuals’ lives. In its essence, the values behind blockchain are not that much different from those fought for during the Great French Revolution: Liberté-Égalité-Fraternité. A revolution, however, can have a will of its own. It can live its life in a total contradiction to and separation from morally beautiful virtues that were supposed to underpin it. Blockchain was designed to enable the economic inclusion of those who are economically weak and it is supposed to be the sword pointed at institutions that for ages benefited from the fact that they provided trust to the market. This weapon as any weapon, however, can easily be misused. Rather than the predicted inclusion, we might witness the exclusion of those who do not understand the technology and are left behind.

Blockchain has the potential to be a great force for societal transformation. It might fix some serious problems in modern society: atrocities, rigged elections, decision-making stalemates, governance crisis (Bulkin, 2016). On one hand, the economy based on DLT can offer unprecedented levels of efficiency and the buy-in needed to establish cooperation at the scale required. On the other hand, if no ethical framework is created, a system designed to counteract power imbalances can be used to generate them. This way “blockchain can support a social system that is, in fact, much worse than what we have today, one in which power abuses will become more prevalent and a lot harder to address” (Bulkin, 2016).

The revolution will certainly do away with some financial institutions in the as we understand them today. The blockchain tsunami might leave behind a brand new world of finance – it might be like a fire consuming everything on its path – it might leave only ash or be the new beginning – the fresh rich soil for plants to blossom. We might as well end up seeing “all the vices of the Old World peering from the new garments;[singing] a new song, but it [will end] ever in the old refrain: Bread, meat, gold, and blood!” (Krasiński, 1835)².

Trojan horse?

In April 2016 at Metro Expo the Vice President of Sberbank (Andrey Sharov), Russia’s biggest bank by assets, opined that the advent and spread of blockchain technology will see banks disappear by 2026 (CryptoCoinsNews, 2016a). It appears to be a great paradox. The industry whose entire existence is

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2 “The Undivine Comedy”: the Count to Pancras – reflection on revolutionists behaviour.
tend les valeurs pour lesquelles la chaîne de blocs a été créée : priver les intermédiaires centraux de tout contrôle sur la vie des individus. Les valeurs derrière Blockchain ne sont essentiellement pas très différentes de celles défendues pendant la Grande Révolution française : Liberté-Egalité-Fraternité. Une révolution, cependant, peut avoir une volonté propre. Nous ne devrions pas oublier que chaque révolution a également un visage non éthique – le visage des laissés pour compte, le visage de ceux qui n’adopteront pas la technologie, le visage des gagnants et des perdants.

La banque de détail, les services post-transactions et la tenue de registres sont des exemples de services financiers sur lesquels l’adoption éventuelle de cette technologie de Blockchain a un impact. L’industrie dont l’existence même est menacée par l’adoption de la technologie investit en même temps massivement dans son développement. Comment expliquer ce paradoxe ? La technologie est-elle un cheval de Troie ou la jeopardised by the adoption of the technology is, at the same time, investing heavily in its development. This does not relate purely to retail banking. The industry that is said to be greatly impacted is post-trade securities clearing and settlement (a set of services where the buyer and the seller compare trade details, approve the transaction, change records of ownership and arrange for the transfer of securities and cash).

In April 2016 the European Central Bank issued an occasional paper in which it stated that DLT has the potential to speed up the settlement and clearing of financial assets (bonds, equities, etc.), eliminating the liquidity and credit risk. It has been concluded that almost all post-trade functions will be impacted by the adoption of the technology: a) custody – due to smart contracts and self-executing algorithms that will update accounts automatically; b) settlement – as trading and clearing will occur instantaneously (trading platforms to be connected to distributed ledgers); c) clearing was said to still be required for some derivative transactions, however netting and margin calls will become automatic; d) safe-keeping will be facilitated by recording of ownership in distributed ledgers; e) ancillary banking services are also to be impacted as, for instance, the need for collateral will be dramatically reduced and its availability on the market will increase. Nevertheless, some functions will still need to be performed by post-trade services providers – such as the notary function – as the involvement of regulated entities will still be required at least in the current regulatory landscape (ECB, 2016). This, however, does not apply to reporting obligations as blockchain technology could facilitate the collection, consolidation, and sharing of data for reporting, risk management, and supervisory purposes. With DLT one could easily imagine the world where regulators have real-time access to all relevant records.

**Spirit of Laws**

Retail banking, post-trade services and record-keeping are only a sample of financial services impacted by the possible adoption of the blockchain technology. What is the source of this paradox? Is the technology a Trojan horse or is the blockchain revolution simply like Saturn: it devours its own children (G. Büchner)? The said paradox brings with it serious conflicts of interests – it is inadvisable to expect a professional to support the development of the technology that might push him off the cliff. The financial institutions face an ethical dilemma here. They should be aware of this and act very cautiously. Distorting the technology to keep a dominant position in the market would mean eroding its ethical roots.

The fact that blockchain technology faces serious governance, regulatory and legal issues is no surprise. In January 2017 ESMA, in its report pertaining to DLT
révolution de Blockchain est-elle simplement comme Saturne : elle dévore ses propres enfants ? Ce paradoxe s’accompagne de graves conflits d’intérêts – il n’est pas recommandé d’attendre d’un professionnel de soutenir le développement de la technologie qui pourrait le pousser en bas du précipice. Les institutions financières sont confrontées à un dilemme éthique ici. Elles devraient être conscientes de cela et agir avec beaucoup de prudence. Déformer la technologie pour conserver une position dominante sur le marché signifierait une érosion de ses fondements éthiques.

Le fait que la technologie de Blockchain soit confrontée à de sérieux problèmes de gouvernance, de réglementation et juridiques n’est pas une surprise. Les régulateurs et législateurs du monde entier commencent à reconnaître l’impact que la technologie du registre distribué (DLT) est censée avoir sur le and securities market, stated that: “at this stage, [it] believes that it is premature to fully appreciate the changes that the technology could bring and the regulatory response that may be needed, given that the technology is still evolving and practical applications are limited both in number and scope” (ESMA, 2017). It is worth noting that regulators and legislators all over the world are starting to recognise the impact that DLT is supposed to have on the regulatory and legal landscape. Laws, recommendations, opinions, interpretations are issued almost each day in all parts of the word. These relate mainly to digital currency but are expected to change in the near future (Hawaii’s Blockchain Exploration Bill (Cryptogolds, 2017), Poland’s Financial Ombudsman calling for Bitcoin Exchange Regulation (PolskieRadio.pl, 2017), BitLicense rules by NYSDFS (Morgan Lewis, 2015) – these are only a few examples).

The impact that DLT might have on the legal system is colossal. As the technology storms all aspects of life it will besiege all fields of law and change them. Intellectual property law (fair compensation for the intellectual property), property law (land registers), inheritance law (smart contracts), data protection law, criminal law (AML, commerce crime, fraud), administrative law (record-keeping), contract law (smart contracts), securities law, corporate law (IPOs, proxy voting, DAOs), constitutional law (e-voting), banking law (both private and public), patent law – all those and possibly many others are open to blockchain’s assault.

The law in its essence is derivative vis-à-vis the reality. It is being created after certain processes, occurrences, phenomenon emerged – it is not created in abstracto. This is where ethics might come into play. The technology is hard to capture by legislation, it sneaks, it winds like a wild river and when you think you have already seized it, it turns out to have flooded the brand new area you have not expected it to occupy. The unregulated space is huge. Is this space where things that are not prohibited, actually perpetuating a problem? Are activities that are not explicitly against the letter of law ethical in the eyes of the public? The ethics of blockchain appears to be that the hidden spirit of the law has not yet arrived. However, this does not mean it is not already applicable. A set of ethical norms might be of great value for legal systems based on Roman Law, especially in continental Europe where legal norms are extracted from legal texts: this is where ethics has the final word. The lack of harmonisation and standardisation is blockchain’s biggest challenge. The financial industry should make an effort to create common business rules and sound governance arrangements.

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3 DAO – decentralized autonomous organization – an automated company operated by hard-coded rules enforced on a blockchain.
La technologie me laisse pas facilement circonscrire par la législation, en conséquence un immense espace non régulé subsiste. Est-ce que cet espace n'est pas à la source du problème ? Les activités, qui ne sont pas ouvertement contraires à la lettre de la loi, sont-elles éthiques aux yeux du public ? L'industrie financière devrait s'efforcer de créer des règles communes et des accords de gouvernance sains, basés sur l'éthique, même en l'absence de lois et de réglementations régissant la technologie.

Si les problèmes relatifs au comportement potentiellement contraire à l'éthique ne sont pas traités suffisamment tôt, la technologie du registre distribué (DLT) pourrait devenir un espace idéal pour le déploiement d'abus généralisés. Comment résoudre ce problème ? L'une des réponses possibles passe par les outils offerts par la technologie basée sur l'éthique, même en l'absence de lois et de réglementations régissant la technologie.

**Ethical Blockchain?**

It is time to pose the crucial question: is DLT ethical in its essence? The answer appears to be obvious, a technology cannot be labelled as being ethical or unethical – it is only a tool and the tool is only as ethical as the people who use it. Some claim blockchain could have prevented the DNS’s denial of service attack (ConsenSys, 2016), Soros leaks (CoinDesk, 2017), the Wells Fargo scam (Cointelegraph, 2016) or Lehman Brothers collapse (Finance Magnates, 2016), others would rather see the technology as the new Manhattan Project. We have yet to see who is right. However, at this very early stage, some concerns need to be raised.

DLT might consume an unsustainable amount of energy, which is mainly a problem with unrestricted distributed ledgers such as the bitcoin blockchain (and the computing power required for validating transactions). The technology might become a job killer; it might be vulnerable to attacks as the protocols are all based on the same methodology; it might carry operational risks (software can have bugs). The consensus on changes to the network/codes might be difficult to achieve and the management of those codes might give rise to potential conflicts of interest. There is a question mark over the scalability of the technology (can it be replicated on a wider scale?) and over its interoperability with existing systems (Delivorias, 2016). Due to the public nature of a ledger and permanent recording, some personal data protection issues might arise, one of them being the right to be forgotten. Furthermore, there is a potential risk of fraud as private/public keys, when stolen, might be used fraudulently to record fictitious transactions.

A well-known social fact is that people are much more likely to commit violence against victims they can’t see. Blockchain is an environment where anonymity is prevalent and physical presence cannot be felt. This might lead to a whole range of unethical behaviour such as child pornography, weapons trade, ransom viruses or attacks on the freedom of speech (Bulkin, 2016). This behaviour might be encouraged by the freedom to use value without restrictions by centralised political powers. The technology might make transactions virtually impossible to trace or control, which can motivate people to abandon essential ethical norms – particularly if there is little or no risk of being found out.

If concerns regarding potentially unethical behaviour are not addressed early enough, DLT might become a perfect space for widespread abuse. How can we solve this issue? One of the possible answers is through the tools offered by the technology itself. The unified...
A set of ethical principles/rules might be created and voluntarily adopted by organisations that operate on a blockchain (Bulkin, 2016). Those principles could possibly take the form of smart contracts, embedded into the network. If this were to happen, ethical rules would be broadcast across blockchains and we would witness the unprecedented spread of ethics across the world. The blockchain revolution would convert itself into the revolution of ethics.

The wind of change is coming. However, the explosion of enthusiasm might soon need to be tempered. Is the technology a new Great Revolution? Personally, I would say that it is, bearing in mind all obstacles following from the adoption of DLT. We could legitimately assume there will not be one master blockchain but rather an invasion of separate blockchains gradually flooding different sectors (e.g. Euroclear & Paxos bankchain gold initiative). Segmentation appears to be inevitable with some kind of a governing body in the heart of a blockchain network (a restricted ledger) at least at the first stage of the blockchain storm. There is a great risk that the DLT revolution might devour its own children, therefore financial institutions should tackle the ethical aspects of this revolution carefully – otherwise, they might unintentionally contribute to their own collapse as Louis XVI once did.

* * *

It was a sunny day in January 1793. Louis was standing surrounded by the people of Paris. He looked, surprised, at the shining blade that was supposed to end his, a monarch’s, life. It was familiar to him. What an irony – Louis thought – I helped to construct it…

4 Louis XVI was guillotined on the 21st of January 1793. Legend says the king improved the project of a guillotine submitted by A. Louis (Cisek, 2006).
References


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