

***“Trust me, I’m a coder!”  
Checks and balances for a blockchain society***

***The Blockchain: disrupting the classical ledgers based society***

During the last year, the word Blockchain technology has been on everyone’s lips. This is an incredible innovation, which arrived with the introduction of the Bitcoin, the most successful cryptocurrency so far.

This technology consists in cryptographically secured distributed ledgers, which will substitute traditional ledgers on which our modern economies and societies are built on, since everything that can be coded into a ledger can be transposed into a blockchain.

The distributed ledger protocols of blockchain are characterized by the fact that the consensus on the truth and validity of transactions are agreed upon high-powered crypto-economic incentive protocols, basically transactions get approved by the network, and once agreed they enter in a chain in the form of a block and are linked to all the other blocks.

In this sense, this technology is defined as trustless and this due to the fact that there is no need for third-party verification<sup>1</sup>.

Already by just considering bitcoins, it is easy to understand its disruptive potential, able to challenge the traditional monetary system. By taking a step further and exploring how the so-called smart contracts<sup>2</sup> integrate with this technology, we can then have a complete overview of the enormous opportunities in front of us.

We are not simply looking at an innovation able to cut production costs and at a technology able to run economic activities in a much more efficient way, but we are dealing with a true institutional innovation<sup>3</sup>.

A good example are the decentralized autonomous organizations. These consist in a combination of smart contracts and allow all shareholders to express their vote and opinion on the proposals and operations taking place at the level of the decentralized organization.

The consequent question is: what happened to the trust-based relationship between citizens and classical institutions? The rising search for new instruments of decentralized governance are dismissing the once trustworthy central banks, governments, but also the same rules governing forms of aggregation and entrepreneurship.

Trust is still the fundamental element which intrinsically has to characterize transactions and exchanges, nevertheless with the blockchain technology it has irremediably changed its shape.

***It’s not just finance! An unlimited range of possible solutions***

“Silicon Valley is coming,” these are the words with which Jamie Dimon, JPMorgan Chase CEO, has addressed its shareholders in the annual letter and so far, the main field of research for the applications of the blockchain technology has in fact been the financial one<sup>4</sup>.

Threatened by the new network business models which can disrupt the financial system as we know it, all big financial services and banking institutions have joined or created their own hub or research department investigating the possible uses of this innovation in order to not be left out from the coming technological revolution.

The absence of middle-men obtainable through the blockchain system, will in fact cut operation costs enormously and will definitely make organizational operations faster<sup>5</sup>.

Nevertheless, blockchain might be beneficial for several other sectors<sup>6</sup>.

In relation to renewable energy on online platforms, the risk of either too much or too little energy flow could be mitigated by using blockchain for the introduction of “virtual power plants” which generate resources that without being all allocated in one single place, are connected by using a smart grid. Through this smart grid the meeting of demand and offer, and the consequent distribution could be easily optimized.

Research on this is being conducted both by start-ups and by big companies like General Electric, which, in one of its reports, is presenting a project conducted in Carros (France) highlighting the purpose of transforming Carros into a constellation of microgrids, where “prosumers” (producers who are at the same time consumers) can instantly buy and sell electricity from each other, depending on their needs. In this case, the blockchain technology combined with smart grids, through the exchange of what they call “greencoins”, will allow the transfer of energy blocks in a cheaper and cleaner way<sup>7</sup>.

The blockchain technology is a great instrument also for recording intellectual property.

As we can see from new online music platforms, through blockchain it is possible for an underlying peer-to-peer network to stream and retail music while, at the same time, providing artists with transparent accounting and automatically split up royalty payments. What is interesting from the PeerTracks project, one of the new music platforms using the blockchain, is that artists can create their “Notes” with which artists can offer perks and benefits to the their Notes-holders and their value is connected to the artist’s popularity on the PeerTracks platform, creating forms of engagement and support between artists and fans<sup>8</sup>.

Also in the charity sector, by using the blockchain there is no need to apply fees for the transactions, like it happens both in the case of donations through credit/debit cards and in the case of crowdfunding platforms. Money will go directly to the charity institution for free and will be recorded in a transparent way on the digital ledger.

Important is also the possibility to use this technology for elections. In a recent paper released by the European Parliamentary Research Service, it is underlined how blockchain technology could bring more transparency and efficiency in the election process<sup>9</sup>. In fact, it would be possible to keep historic record of the vote, which could not be changed afterwards because the other voters could recognize the difference with their records.

Furthermore, adding illegitimate votes would not be possible due to the fact that multiple parties could check the compliance with the electoral rules.

These are just few examples of how this technology can be used in our daily lives and there are many other incredible applications waiting to be investigated.

### ***The challenges we will face with this disruptive innovation...***

The *file rouge* in all the above described examples can be summarized in one word: TRUST.

What characterized all the possible uses of this amazing innovation is a shift of trust, from traditional institutions to the trust given to the blockchain. But what does it mean to trust a blockchain? In the innovation which is revolutionizing the classical view of community we have and which is creating direct connections from peers to peers, trust will be relying on algorithms, and coding will be the common language of the rules governing our society.

Still lots of people find the IT field very complex and for the moment, this technology is not yet totally “user friendly” and appears very complicated.

The tendency will be then to rely our trust on who is familiar with algorithms, with the risk to have a form of “coding-oligarchy”, characterized by the essential knowledge of this technology concentrated in the hands of the few. We can already observe this in the bitcoins experience, where the number of third parties in charge of “investing” in bitcoins is increasing<sup>10</sup> and this is certainly due to the fact that lots of people perceive them just as a form of investment and consider starting to use cryptocurrencies by themselves as a very complex activity.

By reading the white paper for bitcoins, released in 2008 by Satoshi Nakamoto<sup>11</sup>, we can notice how he underlines the lack of trust in traditional institution like banks, and it is not by chance that this form of cryptocurrency was introduced just after the big economic crisis<sup>12</sup>.

Thus, it is worthy to remember that what created in citizens this feeling of lack of trust towards financial institution is given also by the fact that we trusted them, while people in OECD countries have a financial literacy of 13.7 out of a possible 21<sup>13</sup>. Financial terminology is obscure to a lot of people and this has determined their total reliance on governments, central banks and financial institutions and then, when things went wrong, people felt let down and betrayed.

At the same time, this means that we trusted somebody else to run our economy, without being aware of how the instruments they were using, really worked.

What if we trust coders to run these platforms but we have no idea about what they are doing and how they are doing it? Aren't we just taking again the same risk? Shall we not start thinking how to foster this technology and their positive potential and at the same time do not make the same mistake?

### ***... and what we need to make the best out of it.***

***Two proposal: Mainstream IT-literacy and rules, not as form of development limitations but as unavoidable form of fundamental rights protection***

If we want to achieve a transparent peer to peer society, then every peer has to be given the instruments to develop the necessary skills to fully understand what is happening around him/her and actively and consciously participate.

If we want this innovation to be as inclusive as possible, then we need to develop a mainstream technological literacy.

The lack of education and in general, of knowledge of rules, has always put people to the mercy of the stronger ones, the same ones that had the means to understand, decide and adopt rules, aware of the fact that people would have not be able to contrast them because ignorant of what was going on.

Abuses of power have always been easier when people did not have the possibility to understand the situation they were living and critically think and decide for themselves and for the wellbeing of the whole community.

Furthermore, are we truly ready to give up the entire idea of State and society we have built in these centuries? Are we sure that with distributed technologies will be able to look after each other properly and protect our privacy and data?

How this technology, through its operators, is going to make sure substantial equality will be effectively envisaged? How is it going to ensure that the protection of fundamental rights which, unfortunately, in many realities are still solely written down statements, will be granted?

Adopting rules has always been the activity able to provide the right balance between different interests in our society and shall not be used to stop progress, because this would be just counterproductive under every interpretation of our inner human nature.

Nevertheless, we need forms of regulation. We can certainly get rid of third parties in many fields, we can review our fundamental rights under a new light brought by the evolving society, but we should keep in mind that these rights are achievements coming from dark times and as far as these times may appear to be, we can still experiment abuses of power.

We shall fear and avoid the risk of Orwellian “Pigs oligarchies”<sup>14</sup> and forms of governance, based on broadly recognized fundamental principles and rights, are the only way enabling us to prevent this and eventually, by using the technology for the own sake of assuring these rights, we could even reach better results than we did in the past.

Even from a social rights perspective, the rising of parallel peer-to-peer economic communities will be a call for legislators to take into account these new developments and ensure that everybody is able to have the same chances to make it.

This innovation may be one of the most disruptive of our time, but as every innovation, it has also many positive sides. The improvement of men’s lives still need to be pursued and it cannot and shall not be stopped. Nevertheless, the human story is an evolution story and we cannot and shall not look forward forgetting our history, our achievements, our failures.

Through blockchain, we will challenge once again our sense of community and differently from the past, rule-makers should not be threatened by the disruption, neither pretend it is not happening.

On the contrary, we should embrace it, stronger of our past and enriched by our values, allowing ourselves to explore the blockchain and rebuild our society with the aim to give the chance to everybody to be able to benefit from it, granting better life standards and still protecting our fundamental rights.

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<sup>1</sup> S. Davidson, P. De Filippi and J. Potts, *Disrupting governance: The new institutional economics of distributed ledger technology*, (SSRN 19 July 2016), [https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=2749514](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2749514)

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<sup>2</sup> Smart contracts consist in contracts based on blockchain technology whose terms are executed automatically on the pull of some triggers.

<sup>3</sup> S. Davidson, P. De Filippi and J. Potts, *Economics of Blockchain*, (SSRN 8 March 2016), [https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=2744751](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2744751)

<sup>4</sup> A. Shontell, *Jamie Dimon: Silicon Valley startups are coming to eat Wall Street's lunch*, (Business Insider, 10 April 2015), <http://www.businessinsider.com/jamie-dimon-shareholder-letter-and-silicon-valley-2015-4?IR=T>

<sup>5</sup> *How Blockchain Technology Will Disrupt Financial Services Firms*, Knowledge@Wharton.

The Wharton School, University of Pennsylvania, 24 May, 2016. Web. 7 January, 2017

<<http://knowledge.wharton.upenn.edu/article/blockchain-technology-will-disrupt-financial-services-firms/>>

<sup>6</sup> These are well identified in D. Tapscott and A. Tapscott, *Blockchain Revolution: How the Technology Behind Bitcoin Is Changing Money, Business, and the World*, 2016.

<sup>7</sup> L. Schmitt, *How Renewable Energy Is Taking A Page From Bitcoin*, (GE Grid Solutions Report, 28 November 2016), <http://www.gereports.com/renewable-energy-taking-page-bitcoin/>

<sup>8</sup> J. Redman, *PeerTracks & 'Blockchain 3.0' Platform MUSE Set to Transform the Music Industry*, (in bitcoin.com 27 January, 2016), <https://news.bitcoin.com/peertracks-blockchain-3-0-platform-muse-set-transform-music-industry/>

<sup>9</sup> P. Boucher, *What if blockchain technology revolutionised voting?* (EPRS, September 2016).

<sup>10</sup> H. Mai, *Instant revolution of payments? The quest for real-time payments*, (Current Issues - Global financial markets, Deutsche Bank Research, 9 December 2015).

<sup>11</sup> S. Nakamoto, *Bitcoin: A Peer-to-Peer Electronic Cash System*, (White Paper, 2008).

<sup>12</sup> V. Kostakis and C. Giotitsas, *The (A)Political Economy of Bitcoin*, "Journal for a Global Sustainable Information Society", (Vol 12, No 2 (2014)).

<sup>13</sup> OECD/INFE, *International Survey of Adult Financial Literacy Competencies*, 2016, p. 52.

<sup>14</sup> G. Orwell, *Animal farm*, (Harlow: Longman, 1989).