



Blockchain Assets
· Cryptoasset Managers · Est. 2017 ·

Human Rights, Freedom and Liberty in the era of Blockchain Technology

Submission to Australian Human Rights Commission

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I. Introduction and Executive Summary

For more than a decade now a new technology has been developing which is referred to by a number of names, including : Web 3.0; Blockchain Technology; Distributed Ledger Technology; Bitcoin and Cryptocurrencies. ¹ For the purpose of this paper I use the term Blockchain Technology ('BT') to cover all of these descriptives.

Over the past 2 years in particular an awareness of BT has started to break through to mainstream media, mainly due to the cryptocurrency bubble of 2017/18. ² That awareness has subsided since, but the development of the technology has not, indeed it is moving ahead at great speed. Among experts in the field BT is considered one of the most important technology developments of our time and said to be as important as the invention of mechanical time. ^{3 4}

The intersection of BT and Human Rights ('HR') is a fascinating area of study as while BT can be a democracy enhancing technology, ⁵ it can also be the ultimate big brother enabler.

⁶ The decisions that are made at this stage, while systems are still be architected, will impact greatly the quality of freedom and liberty that future generations will enjoy.

There is already a significant body knowledge available on the technical aspects of BT and there is a rapidly growing amount of work being done on the HR aspects. Studying BT and HR is challenging as both aspects are complicated and it is not possible to understand the HR issues without a reasonably detailed understanding of the technical aspects of BT.

¹ For the purpose of this paper I am using the date of the Bitcoin whitepaper (31 October 2008) as the starting point for these technologies but in fact the actual starting point is far earlier and in fact it is hard to identify a specific time and place where it started.

² https://en.wikipedia.org/wiki/Cryptocurrency_bubble

³ 'Mechanical time opened up entirely new categories of economic organisation that had until then been not just impossible, but unimaginable. Mechanical time allowed trade and exchange to be synchronised across great distances. It allowed for production and transport to be coordinated. It allowed for the day to be structured, for work to be compensated according to the amount of time worked — and for workers to know that they were being compensated fairly. Both employers and employees could look at a standard, independent instrument to verify that a contract had been performed.'

⁴ The Blockchain Economy: A beginner's guide to institutional cryptoeconomics, Chris Berg, Sinclair Davidson and Jason Potts are from the RMIT Blockchain Innovation Hub, the world's first social science research centre into the economics, politics, sociology, and law of blockchain technology.

⁵ <https://medium.com/@markvanrijmenam/liquid-democracy-how-blockchain-can-improve-the-democratic-process-and-enable-a-liquid-democracy-9914cb86568e>

⁶ Alex Gladstein, Chief Strategic Officer, Human Rights Foundation, <https://medium.com/@alexgladstein/a-human-rights-activists-response-to-bitcoin-critics-d50e6760ee80>

Aside from understanding BT, in order to best draw out the HR issues, it is necessary for the reader to have an appreciation of the importance of Cash in a free society, the properties of good money and the difference between Fiat currencies and Cryptographic currencies.

A further thread to this paper is privacy and in particular a discussion on Surveillance Capitalism ⁷ and how BT provides our society with an opportunity to undo the damage that the internet has done to our privacy. I conclude by drawing out the point that while we do have an opportunity take back our privacy with BT the window of this opportunity is narrow and we need to act with some urgency if we are to put the privacy gene back in the bottle.

Wherever possible, I refer the reader to a source of further information, those further sources of information are in my opinion the leading thinkers and communicators in the BT/HR space. ⁸ This is not an academic paper, my aim is to give the reader an understanding of BT, why it is important in the context of HR and what the reader can do to move the BT/HR agenda forward in Australia.

II. Technology Background

Public Distributed Ledger Technology

If I think about trying to describe the electric light bulb technology to someone who has never seen one, I would not describe electricity and the process by which the elements of the bulb turn into light, I would simply say that it is a tennis size glass ball that, when turned on, lights up a room. Taking this approach with BT I would say that it is a public ledger that thousands of people can see and update at the same time. The 'so what' question with the light bulb is that it is now possible to do things at night time without the need for candles or fire. The 'so what' question for BT is that it is now possible for record keeping to be maintained by a community rather than by a centralised party, this obviously reduces the need for and the power of centralised record keepers. The impact - and this is the important point to keep in mind - is that by decentralising record keeping it is possible to reduce censorship, fraud and corruption, this is why BT is considered a democracy enhancing technology.

The big challenge with BT is not the ability to have a ledger visible by many people at the same time, the challenge is how to get people to agree on the balance in the ledger. In order

⁷ https://en.wikipedia.org/wiki/Surveillance_capitalism

⁸ Including a number of Australians' based both in Australia and overseas

to do this the community (the members of which are distributed around the world) need to reach a consensus on the balance and the transactions that are written on the ledger. Achieving distributed consensus is one of the computer science/mathematical challenges that now seems to have been solved with BT. The solution is found in mathematics and I refer readers to the many papers by Emin Gun-Sirer of Cornell University ⁹ and also to Dr Leemon Baird ¹⁰ both of whom are experts in this highly technical field.

The research in this area is by no mean complete or conclusive and there are many implementations each with different mechanisms. The longest running implementation is Bitcoin (which uses so called Nakamoto consensus), Ethereum ¹¹ is the second most well known but Avalanche ¹² is an interesting new method and Hedera Hashgraph ¹³ also has an interesting approach.

Public vs Private Blockchain Technology

Before leaving the technical part of this paper it is important for readers to understand the difference between public (permissionless) and private (permissioned) BT. Conceptually the difference is like the *intranet* and the *internet*, as we know the internet is fairly accessible to anyone while intranets have a gatekeeper.

The benefits of **public BT** are that transactions are permissionless, uncensorable, and immutable, it is important to know that many of these benefits not only disappear with **private BT** but can achieve the opposite of the benefit. So, for example, we may see in the future an exclamation that ‘...voting has been fair as it was done on ‘the blockchain’...’ whereas if the voting was done on a private blockchain, then we have no idea if it was indeed fair.

Some people consider private blockchains to be nothing more than a smarter centralised database, that’s not a bad starting place but it is not always the case, there are some very good private blockchains, the point is that it is paramount to not treat all blockchains equally and understand the properties of each one, as there are many.

In my view Australia should adopt a practice at Government level that **‘public services should be on public blockchains, if not why not’**. It is perfectly possible to maintain

⁹ <http://www.cs.cornell.edu/people/egs/>

¹⁰ <http://leemon.com/>

¹¹ <https://www.ethereum.org/>

¹² Avalanche Whitepaper is here <https://ipfs.io/ipfs/QmUy4jh5mGNZvLkjies1RWM4YuvJh5o2FYopNPVYwrRVGV>

¹³ Hedera Hashgraph explanation is here <https://www.youtube.com/watch?v=wgwYU1Zr9Tg>

privacy in a public blockchain environment. I cite car registration as an excellent example of a Government service which could easily be run on a public blockchain.

For the purpose of considering BT in the context of HR no more technical understanding of the technology is needed at this stage.

II. Cash as Freedom

When referring to Cash here I use upper case C to refer to physical notes and coins and lower case c to refer to digits held on bank account ledgers. Much of what I set out below is a summary of an excellent report prepared by Washington DC based non-for-profit advocacy group for cryptocurrency, Coin Center.¹⁴

Cash is Essential to a Free and Open Society

A peer-to-peer Cash transaction holds within it a number of freedoms, these include: freedom from the need to trust the counterparty as it is a open exchange between the parties; freedom from the need for permission to trade/deal with each other; freedom from possibility of censorship and the freedom of privacy.

In a world with no Cash all transactions must be intermediated by financial institutions. In this trusted position intermediaries become the owners of the most private information of individuals - this can and has lead to abuse and fraud. If there is no way to avoid intermediation there is no way to preserve privacy and without privacy there can be no freedom.

Cash is an ancient technology that allows us to avoid intermediation and thus preserve individual liberty and human dignity, without cash there is no exit - no chance for the kind of dignity-preserving privacy that undergirds and open society. Cash is essential to an open society.

The Emergence of the Cashless Society

The use of Cash is diminishing (at least in the first world) but as an example:

1. Nordic countries such as Sweden, Iceland and Finland use cash for less than 2% of transactions;
2. South Korea targets 2020 for phasing out paper notes and coins; and

¹⁴ Coin Center 'The Case for Electronic Cash', full report here <https://coincenter.org/entry/the-case-for-electronic-cash>

3. China's Wechat and AliPay account for 92% of cashless transactions and overall China has gone 85% cashless (think about the data these two companies collect on their clients and then think about what they do with that data...).

Becoming a Cashless society is nothing to be proud of as it means that as individuals we have given up the important freedoms outlined above.

Central Banks would love to do away with cash all together. Doing so would grow the monetary policy tools at their disposal, they site tax evasion as an issue to justify the banning of cash. The Bank of England at one point proposed abolishing Cash.

The Reserve Bank of Australia is a huge fan of a cashless society, but they are a fan only so long as all transactions go through a centralised monitoring agency. In December 2018 RBA Governor Philip Lowe stated that (moving to a cashless society) ' makes a lot of sense...and is in our national interest.' ¹⁵ I will give Governor Lowe the benefit of the doubt and assume he was talking only from a payments efficiency point of view and that he has not considered the HR aspects of a Cashless society. *Here is a excellent example where the Australian HR community need to be informed of the issues so they are able to voice a contrary view of the benefits (or not) of a Cashless Australia.*

In the 2018/19 the Federal Budget contained a recommendation/policy that Cash transaction of over AUD 10,000 should be prohibited. This I understand was in response to the failure of the Commonwealth Bank to report Cash transactions properly to the Australian Cash Transactions Reporting Agency (Austrac). I believe this budget measure has not yet made it to the floor of Parliament (and hopefully it won't) but this type of action by the Government is something that should be of great concern to anyone who is interested in preserving freedom.

Recommendation 1.

Recommend that the Australian Human Rights Commission establish a Blockchain Technology Research Project to make recommendations to Government and the Community on Human Rights aspects of Blockchain Technology

¹⁵ <https://www.rba.gov.au/speeches/2018/sp-gov-2018-11-26.html>

Properties of Good Money

The history of money is long and complex, but for the purpose of this BT/HR discussion it is helpful to understand that there are seven main properties that characterise an item as being Good for the purpose of using it as Money.

1. There must be scarcity
2. It must be easy to transport
3. It must be hard to forge
4. It must be durable
5. It must be divisible
6. It must be fungible (one unit looks the same as another)
7. It must be acceptable to all parties that wish to transact with each other

Good money can be used as a medium of exchange, a unit of account and a store of value.

What is money backed by?

Most of the money used in the world today is referred to a *fiat* money. Fiat money is government-issued currency that is not backed by a physical commodity, such as gold or silver. The value of fiat money is derived from the relationship between supply and demand and the stability of the issuing government, rather than the worth of a commodity backing it. Most modern paper currencies are fiat currencies.

The word "fiat" comes from Latin and is often translated as the decree "it shall be" or "let it be done."

Legal Tender

In Australia our fiat money is deemed legal tender under section 16 of the Currency Act 1965, section 22 of the same act provides that '...A person shall not make or issue a piece of gold, silver, copper, nickel, bronze or of any other material, whether metal or otherwise, of any value...as a token for money or as purporting that the holder is entitled to demand any value denoted on it...'

The Reserve Bank Act 1959 section 44 provides that '*...A person shall not issue a bill or note for the payment of money payable to bearer on demand and intended for circulation...and A*

State shall not issue a bill or note for the payment of money payable to bearer on demand and intended for circulation....’.

Notwithstanding the above, I believe it is not illegal or prohibited to use any other thing as a mean of exchange. Indeed barter and trade arrangement, not involving Australian dollars are recognised by the Australian Taxation Office.¹⁶

Both the Currency Act and the Reserve Bank Act seek to create a monopoly on the creation of currency. This was done in part at a time when Australia was moving from State and sometime bank issued currency and at the time Australia was moving from the Pound to the Dollar.

With the advent of cryptocurrencies and the benefits they bring in terms of economics and freedom, the HR movement in Australia needs to be diligent in protecting the freedoms currently enjoyed through the use of Cash and cryptocurrencies, because cryptocurrencies are the future of Cash payments.

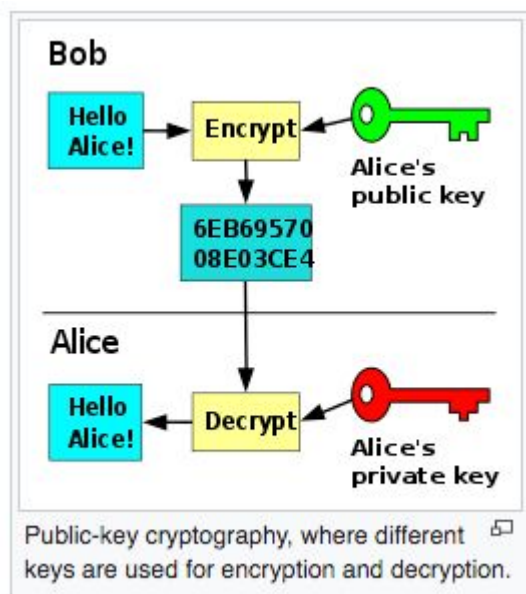
Recommendation 2.

The Australian Human Rights Commission should take on a leadership role in Australia and in international forums defending the right of individuals to trade with each other on a peer to peer basis and to transact using Cash, including all forms of Electronic Cash.

Cryptocurrencies

The crypto part of the word cryptocurrency refers to cryptography and in particular private key cryptography. Although complicated at detailed level at a high level the concept is simple. Just like there are two keys to a physical safety deposit box, one held by the customer and one held by the Bank, there are two keys needed to open a software safety deposit box (wallet) one is public and the other is private. It is the ownership of this private key that unlocks the wallet.

¹⁶ <https://www.ato.gov.au/business/gst/in-detail/rules-for-specific-transactions/barter-and-trade-exchanges/>



It is the holding of the private key that gives ownership and there is a popular saying in crypto circles 'not your key, not your bitcoin' and this led to the Proof of Keys Movement.¹⁷

The currency part of the word also needs a bit of explanation. Each cryptocurrency has its own monetary policy which deals with how much currency is distributed, to whom it is distributed and over what time period is it distributed. As an example, I set out the Bitcoin monetary policy later in this paper.

However, aside from cryptocurrencies we now have an emerging new asset class referred to as cryptoassets.¹⁸ Under cryptoassets we have : cryptocurrencies; cryptocommodities; cryprosecurities; Non-Fungible Tokens; and Asset Backed Tokens. There are many others, the important thing to appreciate is that eventually most real world assets will have a tokenized form and the ownership of these asset will be maintain on BT ledgers.

When considering code and cryptography in the context of HR one issue is question of free speech and whether code is protected from censure under the laws and customs relating to free speech. I do not intend to attempt an answer to this question in this paper, but I refer to the reader to Coin Center publication 'The Constitution Protects Software Developers and Users from Surveillance Overreach' which sets out an excellent analysis of this issue at it relates to US Constitutional Law.¹⁹

¹⁷ <https://bitcoinexchangeguide.com/proof-of-keys-movement-what-not-your-keys-not-your-bitcoin-means/>

¹⁸ The nomenclature is still developing but I refer to the terms used by Chris Burniske in his book Cryptoassets

¹⁹ <https://coincenter.org/entry/e-cash-dex-constitution>

Recommendation 3.

The Australian Human Right Commission research the question of ‘freedom of speech in the context of computer code’ and come to a position on the adequacy of the laws in this point in Australia, particularly with the view to maximising freedom of speech in code and computer science technology.

Bitcoin

There are many other places the reader can refer to for an understanding of Bitcoin, the below is just a highlight for ease of reference.

1. The Bitcoin explanatory paper was published on 31 October 2008 under a pseudonym ‘Satoshi Nakamoto’.
2. Bitcoin is a piece of software which acts as a monetary system, a cash payment system a means of exchange and a unit of account.
3. Bitcoin has limited supply of 21m but each coin divisible up to 8 decimal places.
4. Each Bitcoin divides into 100m Satoshi’s (example A\$ 50 = 0.00942329 Satoshi’s).
5. So far circa 17m Bitcoins have been issued. The last Bitcoin will not be issued until the year 2140.
6. The electronic ledgers maintaining the balances of Bitcoins and who owns them has been running for ten years, it has never had any ‘downtime’, it has never been hacked, it never needs an audit, no permission is needed to buy Bitcoin and use the ledger system.
7. When considering the characteristics of good money, Bitcoin rates in the excellent range on all of them, with the important exception of stability - But stability will come (sometime between now and the year 2140!).

8. There are also some issues with scalability of the payments network and the user interface is still not overly user friendly - But these issues will be fixed.
9. Bitcoin is decentralised, there is no company, headquarters staff CEO, Board or office.
10. Bitcoin is not private, but it is anonymous, all Bitcoin transactions can be tracked using a blockchain explorer like Blockchain Explorer.²⁰

The Bitcoin white paper is just 9 pages long and I think already is one of the most important 9 pages in the history of money.²¹

Of course there are many people who, who hate Bitcoin, first among them is the Bank of International Settlements.²² On the other hand the Central Bank of Finland have called Bitcoin the '...most marvelous structure...' ²³ but this is an exception, the standard practice for the BIS and Central banks is to pour scorn on and belittle cryptocurrencies as scams or ponzi schemes.

There are many voices on both sides of the cryptocurrency debate. I encourage anyone who wants to have a opinion on the merits or otherwise of cryptocurrencies to 'do their own research' resist the temptation to opinion shop.

In the HR world I would however refer the reader to the writings of Alex Gladstein²⁴ ²⁵ of the Human Rights Foundation or Lili Liu²⁶ there are many great podcast on freedom and BT.²⁷

²⁰ <https://www.blockchain.com/explorer>

²¹ <https://bitcoin.org/bitcoin.pdf>

²² I set out my comments on the FSB (BIS) report on crypto here

https://medium.com/@ian_39624/financial-stability-board-fsb-to-monitor-cryptoasset-developments-e0815e22217

²³

https://helda.helsinki.fi/bof/bitstream/handle/123456789/14912/BoF_DP_1727.pdf;jsessionid=2F1E2EDBF1180739B5C13906CA99260E?sequence=1

²⁴ <https://hrf.org/team/alex-gladstein-2/> great podcast on topic here

<http://unconfirmed.libsyn.com/alex-gladstein-of-the-human-rights-foundation-on-the-first-crypto-war-ep021>

²⁵ <https://medium.com/@alexgladstein/a-human-rights-activists-response-to-bitcoin-critics-d50e6760ee80>

²⁶ Great podcast with Lili Liu <https://www.youtube.com/watch?v=PyCfA9-CI0s>

²⁷

<https://unchainedpodcast.wordpress.com/2018/06/06/from-the-oslo-freedom-forum-blockchain-vs-the-surveillance-state-ep-64/>

Privacy Coins

As mentioned above Bitcoin is not private, just anonymous, there are however a number of private coins.²⁸ As the name suggests privacy coins can be used just like Cash, in a very private manner, some are completely invisible by default, some give users the option to turn on or off the privacy function. Aside from the privacy feature they work in much the same manner as Bitcoin.

Recommendation 4.

People from the Australian Human Rights Commission should attend the Onslow Freedom Forum conference (or similar) on Blockchain Technology at the next available opportunity and assess what needs to be done in an Australian context to support freedom and blockchain technology.²⁹

III. Privacy and Technology

The internet, the emergence of global terrorism and the rise of surveillance capitalism has fundamentally changed the attitude we as a society have towards privacy. The internet has enabled invasion of privacy, terrorism has justified the State invasion of privacy and free social media services has given rise to surveillance capitalism.

There is an abundance of public literature setting out the change in privacy brought about by the internet. My aim in this section is to set-out a summary of what BT thought leaders and developers are working on which will give us the opportunity to re-take our privacy.

Surveillance Capitalism

I have been aware of the term Surveillance State forever. But I only heard the term Surveyance Capitalism recently and I was interested to know what it meant. Coined by Shoshana Zuboff³⁰ Surveillance Capitalism refers to the social media business model that was natively enabled by the internet, Facebook, Twitter etc. The social contract (lower case c) we have as a society is we give up our data for a free service, again this has been written

²⁸ <https://hackernoon.com/surviving-crypto-winter-part-three-why-privacy-coins-will-rule-the-next-bull-run-7a50a093e596>

²⁹ <https://cointelegraph.com/news/human-rights-activism-bitcoins-greatest-use-case>

³⁰ <https://breakermag.com/australias-disastrous-new-encryption-law-throws-privacy-on-the-barbie/>

about elsewhere, but this has created the largest and most valuable corporations in the world (the FANGS).³¹

Although surveillance by corporations may seem benign compared to surveillance by the State, it is equally as damaging to a free and open society as we have seen with the UK Parliament report into disinformation and fake news.³²

Privacy Protection as a Defensive Strategy to Surveillance Capitalism and Surveillance States

The privacy system we had before the internet was as simple as a locked draw, we had no way of accessing data on a macro-scale and we held on tight to our privacy. When the internet came we began to store our data on the internet, but the internet was not designed for privacy, it was the opposite it was a system to share information and data. To combat this data privacy laws were introduced, but such laws have exemptions for situations which are ‘...in the interest of national security...’ furthermore corporations traded our data for a free service and build mega enterprises based on selling our data.

Individuals are now in the situation where the State (for national security reasons) want access to our data and Corporations want our data (for revenue reasons). Privacy laws offer no protection from hackers and it is not possible to overlay privacy on a inherently unprivate system, which is what we now have.

Some people may view taking action to preserve one’s privacy to be an offensive act against the State who are trying to protect citizens against harm from terrorist. This ‘...in the interest of national security...’ argument for weakening privacy is actually the opposite.

There are a number of projects in the BT space that are seeking to return our privacy, indeed within a few years the technology will be able to make the whole world dark again, private messaging, private electronic Cash and private records. However, it is not the purpose of this paper to outline these technologies and how they work, the focus is on what this means for HR’s and how the HR movement can work on the public policy issues to

³¹ <https://www.theguardian.com/business/2017/apr/29/fangs-breakneck-rise-facebook-amazon-netflix-google>

³² <https://publications.parliament.uk/pa/cm201719/cmselect/cmcumeds/1791/179102.htm>

make sure that the technology is not censored, curtailed or otherwise blocked by Government.

Blockchain Technology offers possibly the last opportunity that individual have to recapture the ownership of their private data. It cannot be overstated how important it is from a HR perspective that this opportunity is ceased.

In Australia, broadly speaking State and Federal Police are not able to enter and search private premises unless they have a search warrant issued by the relevant authorities. These laws protect the fundamental human right of the privacy of the individual but they are coming under stress as new technology is making access potentially more available and as threats against the security of the community are seemingly increased.

Most laws today which seek to compel the release of private data as a matter of course (without a specific warrant) relate to Know-Your-Client anti-money laundering law such as the Cash Transaction Reports Act 1988. Under these laws a third party (usually a bank) is required to report to the Government certain transactions.

In the Decentralised Finance world this reporting is going to become more difficult as there will be no centralised third party to be held accountable under the law. Government's will react to this and there is an important HR issue to consider here because without some curtailment it is possible for Government to legislate to have complete access to all financial information running on BT.

The question, always, is one of balance. The recently passed encryption laws are horrific example of Government overreach which were rushed through parliament in December 2017.³³ This is a huge HR issue and we really need the Human Rights Commission to help educate and be a voice for the community on the complicated topic of encryption technology and BT privacy.

I refer readers again to the excellent paper by the Coin Center on this topic³⁴ as this could form the basis of a study into the Australian specific laws and HR aspects of BT.

Recommendation 5.

³³ <https://breakermag.com/australias-disastrous-new-encryption-law-throws-privacy-on-the-barbie/>

³⁴ <https://coincenter.org/entry/e-cash-dex-constitution>

The Australian Human Rights Commission should take the lead in the establishment of an international coalition of human rights organisations with the specific purpose of advising Government and the Public on the benefits of privacy and how blockchain technology can be used to recapture privacy while still facilitating access to data for national security and (by consent and for payment) to corporations for commercial purposes.

IV. Conclusion

This paper already over 4000 words. It is a brief summary of a complex topic that lies at the intersection of Blockchain Technology and Human Rights. Each discipline is a complex topic on their own but only by stepping across the disciplines can the issues be seen and an understandings can emerge.

I have identified just 5 HR issues in this paper :

1. code as free speech and the need to protect code from censorship;
2. the importance of Cash to a free society and the opportunity we have with cryptocurrency to once again enjoy the freedoms that come with Cash transactions;
3. the need to protect existing warrant laws designed to prohibe the State from entering private property without a properly exercised warrant and how those laws apply in cyberspace;
4. the important difference between public and private blockchain and the proposition that all Government services should be delivered on a public blockchain, if not why not; and
5. the notion that privacy protecting technology is a defensive strategy to maintain the human right to privacy and the need to allow these technologies to take hold in the blockchain technology era.

The five recommendation made line up with these issues, but above all it is paramount that the Australian Human Rights Commission become aware of BT technology and the opportunity and threats it poses to Australian society. This is not merely of academic interest, we have seen to soft power of the internet on full display over the past few years. *Blockchain Technology will be 10 times more impactful than the internet and the actions*

taken now will determining the quality of freedom and liberty that will be enjoyed by the grandchildren of today, it will not be possible to re-engineer freedoms lost if this opportunity to take back our privacy and restore Cash transactions is lost.