



Blockchain Assets

CRYPTOASSET MANAGERS • EST 2017



Dear Investors,

I have been studying Bitcoin for more than 6 years. I keep an open mind and appreciate that it's a continuous learning exercise but even I was surprised to come across a completely novel analysis of its public policy importance. The analysis is put forward in a thesis prepared by Major Jason Lowery as the final deliverable of his MIT research into strategic military applications of emerging technologies. Major Lowery is an aeronautical engineer. He is the US Space Force's first and only US National Defense Fellow. His job in the military is to '...research strategic military applications of emerging technologies...'. His beast of a thesis is over 200,000 words and it's topic is 'The National Strategic Significance of Bitcoin'.

The Major has shared his thesis with the Office of the President of the United States, the Office of the Secretary of Defence and the Office of the Joint Chiefs of Staff. I purchased a copy and have done my best to summarise the thesis in this newsletter.

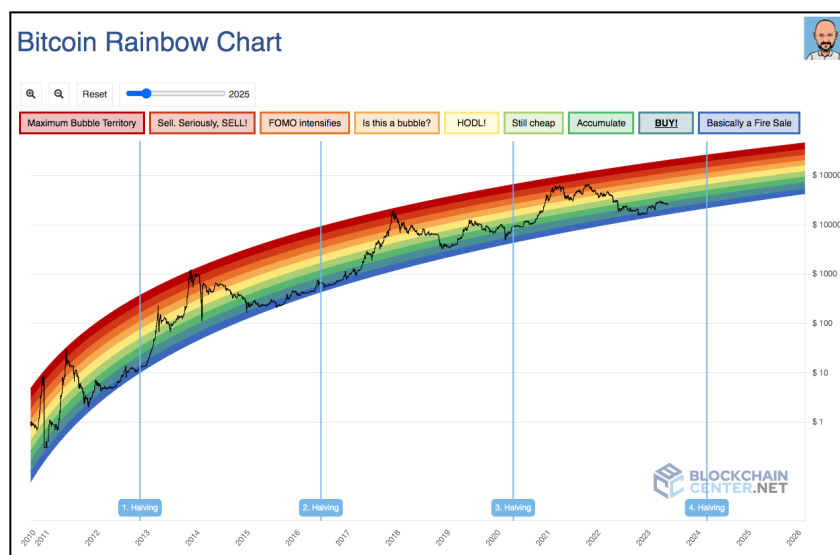
But first... the cryptomarkets

The unit price of the Fund at the end of the quarter was AUD 2.8312 up 34% for the financial year ended 30 June 2023. At the end of last quarter we were starting to feel that a new bull market

was commencing, but this seems to have stalled for the moment. The reason for pause is mainly due to the US attack on the crypto industry. At this stage we feel that 'kitchen sink' is being thrown at this emerging technology. We have the SEC initiating legal action against Coinbase, Binance and other industry participants. We have traditional banks denying banking services to crypto related businesses and we even have some tech companies, like Apple, piling on to deny some of their services to some crypto businesses.

Although frustrating, these types of attacks are to be expected. We expect they will be short lived and will not achieve much other than delaying the inevitable widespread adoption of the technology. There are a number of powerful people in Congress very supportive of our industry and fighting hard to ensure that the US takes the lead in its development. Bitcoin itself is shaping up to be one of the issues for the 2024 US Presidential election. We will wait to see what happens but in any event it is better to bring on the attacks at this stage so we can move to the '...then they join you...' ¹ stage of the process.

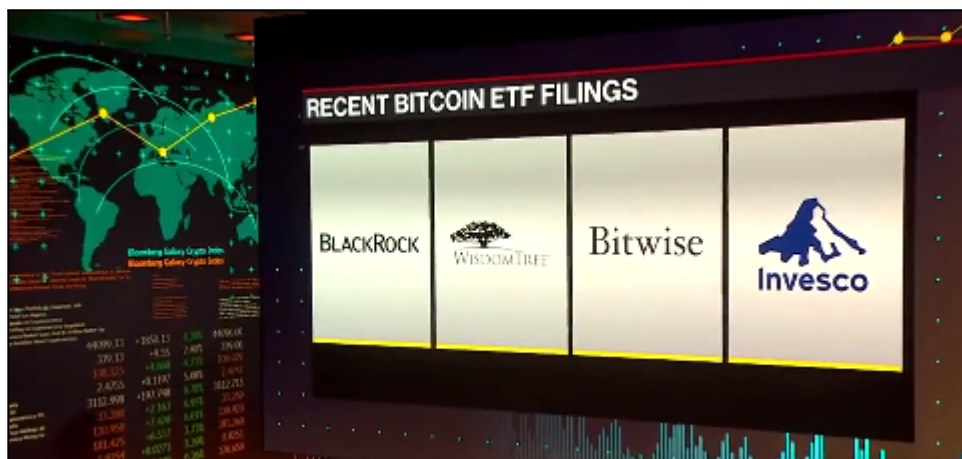
On the technical side, one event we know will happen in the short term is the next Bitcoin halving. At the moment 6.25 bitcoins are issued by the protocol every 10 minutes. The issuance rate is due to halve in May 2024 when the number issued will be 3.125/10 minutes. These so-called halving events happen on schedule every 4 years and typically they have resulted in quite significant price increments as supply is tightened. We are now in the blue/green segment of the 'rainbow' chart below.



¹ Referencing here a quote widely misattributed to Mahatma Gandhi 'first they ignore you, then they fight you, then they join you...'

There have only been 3 previously halving events so it is too early to call this a cycle. But it is certainly an interesting indicator of where we may be in terms of price.

For quite a while I have been talking about the potential institutional adoption of Bitcoin, thus far however, it has failed to materialise. This may be about to change. On 15 June 2023 news broke that BlackRock, the world's largest fund manager, with over USD 9 trillion worth of assets under management, lodged an application for a Bitcoin Exchange Traded Fund (ETF). If successful the ETF will be listed on NASDAQ. This will, for the first time, enable US institutional investors to invest in Bitcoin via a regulated entity. Hot on the heels of this application, a number of others have been lodged, this includes Fidelity Investments, Bitwise and Wisdom Tree. Based on our reading of the situation we believe there is a 70% chance of BlackRock's application being approved (we may know as early as August). If approval is forthcoming we expect there to be further approvals and the demand for Bitcoin to increase significantly.



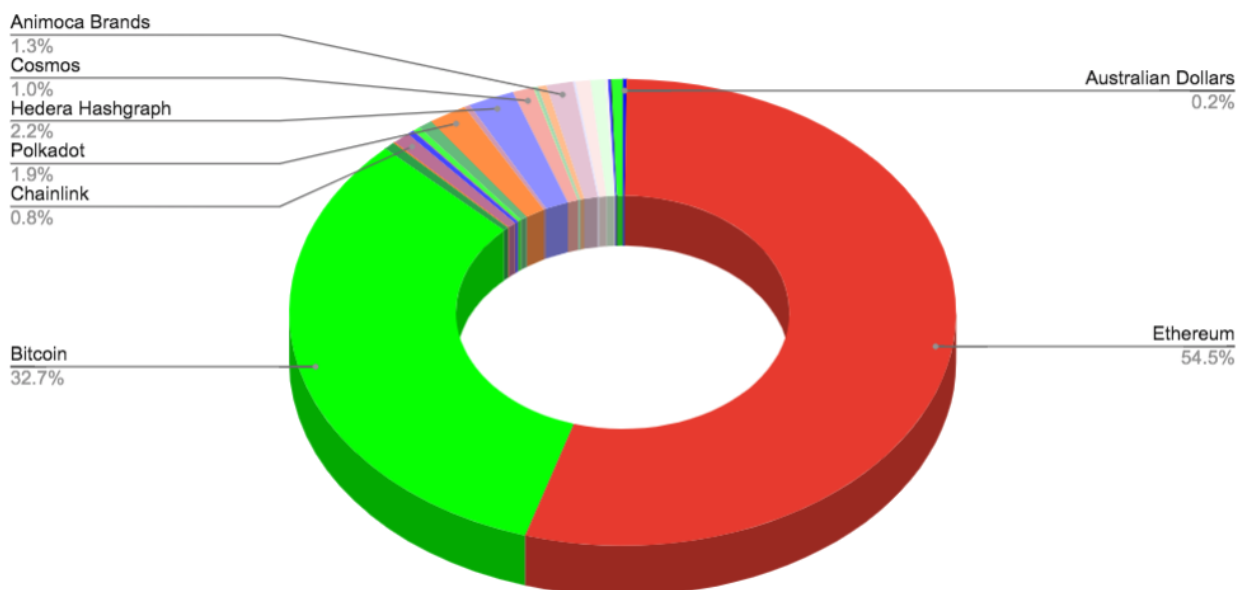
These three things : the Bitcoin halving in May 2024; a short lived regulatory attack; and institutional adoption of Bitcoin via US ETFs are indicators that we are out of the depths of this crypto winter and looking forward to improved sentiment going forward.

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Fund Assets and Key Metrics

Metric	30 September 2017	31 December 2017	31 March 2018	30 June 2018
Unit Price	\$0.93	\$2.14	\$1.18	\$1.09
Return Since Inception	-7.00%	114.00%	18.00%	9.00%
Metric	30 September 2018	31 December 2018	31 March 2019	30 June 2019
Unit Price	\$0.7480	\$0.5178	\$0.5507	\$0.9501
Return Since Inception	-25.20%	-48.22%	-44.93%	-4.99%
Metric	30 September 2019	31 December 2019	31 March 2020	30 June 2020
Unit Price	\$0.5270	\$0.3937	\$0.4408	\$0.6034
Return Since Inception	-47.30%	-60.63%	-55.92%	-39.66%
Metric	30 September 2020	31 December 2020	31 March 2021	30 June 2021
Unit Price	\$0.9449	\$1.6575	\$4.5682	\$3.4543
Return Since Inception	-5.51%	65.75%	356.82%	245.43%
Metric	30 September 2021	31 December 2021	31 March 2022	30 June 2022
Unit Price	\$4.9905	\$5.7599	\$5.3393	\$2.1182
Return Since Inception	399.05%	475.99%	433.93%	111.82%
Metric	30 September 2022	31 December 2022	31 March 2023	30 June 2023
Unit Price	\$2.3768	\$1.7762	\$2.7288	\$2.8312
Return for the Quarter	12.21%	-25.27%	53.63%	3.75%
Return for the past 12 months	-52.37%	-69.16%	-48.89%	33.66%
Return Since Inception	137.68%	77.62%	172.88%	183.12%
Assets Under Management	\$17,184,558.72	\$12,741,156.24	\$19,747,631.13	\$19,934,047.31

Blockchain Early Opportunities Fund - 30 June 2023



Cognitive Dissonance, Hubris and Sunken Cost Fallacy

History is littered with stories of innovators being destroyed for their audacity to present an innovation to unappreciative incumbents.

US Army General Billy Mitchell, was such a person. Shunned and court-martialed for his insolence in insisting that the US spend more on airplanes than ships in the 1920's. It was not until after his death that he received a Congressional gold medal and was recognised as the 'founding father of the US Air Force'. Imagine, not recognising the strategic military importance of aeronautical technology.

In another example gunnery specialists of the British Royal Navy were bitterly opposed to the adoption of self-propelled torpedoes because of how hard it was for them to appreciate how effective this new technology could countervail the strength of their navy.

Everywhere in history we see late adopters of technology pay the price for their hubris. In the 1450's the Emperor of Constantinople passed up the opportunity to be an early adopter of cannon technology. Instead his enemy, the Ottoman Empire, took up the offer and a year later conquered this last outpost of the Roman Empire.

If a new defence technology, as significant as the aircraft, the torpedo or the cannon came along today would we recognise it? This is the question Major Lowery is paid to answer. He no doubt considered AI, robotics, machine learning and others, but he chose Bitcoin.

In his February 2023 thesis he proposes to US military leaders that the adoption of Bitcoin is a matter of strategic military priority. In his view the US military needs to overcome it's cognitive dissonance, hubris and ignore the sunken costs of existing military infrastructure and become an aggressive adopter of Bitcoin. He states that '...If the US does not consider stockpiling strategic Bitcoin reserves, or at the very least encouraging Bitcoin adoption...the US could forfeit a strategically vital power...and set itself back in global power dominance'.

He sets out his reasoning for this in a 354 page thesis as part of his US National Defence force fellowship at the Massachusetts Institute of Technology. His thesis stretches even my imagination beyond my comfort zone. If it was anyone else proposing these ideas I would not have taken the time to even consider it seriously. But given his position and experience within the military, it would be arrogant to not at least consider what he is theorising. What follows is my attempt at a summary of his thesis.

Setting the Scene for the Thesis

The thesis draws on observed lessons from biology, anthropology, physics, chemistry, computer science, mathematics, military history and other disciplines.

Using examples he sets up the notion that there is a ratio between the Benefit of Attacking something and the Cost of Attacking (Ba/Ca) he calls this the Benefit-to-Cost Ratio of Attack (BCRa). If the ratio is high there is a greater likelihood of an attack. The natural tendency is to grow the benefit (Ba) and neglect the cost (Ca), this leads to the collapse of empires, which happens time and time again.

Another concept he introduces the reader to is the difference between Physical Power Projection (PPP) Technologies such as gunpowder and cannons, and Abstract Power Projection (APP) Technologies such as the rule of law, Kings and Presidents. When these different types of power are too far out of kilter conflicts arise and empires fall.

A third setting the scene aspect to the thesis is considering the four existing domains over which humans seek control and the means of establishing that control. The domains being the Sea, the Land, the Sky and Space. These domains are controlled using PPP technologies implemented by the Navy, Army Air and Space Forces. The technologies themselves manifest as kinetic energy weapons, the most lethal being strategic nuclear weapons. But there is now a fifth domain. Cyberspace. The Major's thesis is that Bitcoin is the PPP technology which can be

used to secure property ownership and control in and through cyberspace.

Major Lowery notes that while we have reached stalemate in the kinetic energy weapons race (via the mutually assured destruction theory) there is incredible danger in complacency as no nuclear superpowers have gone head to head in physical combat to settle a meaningful dispute.

Diplomatic power, the United Nations, international treaties and other such things are APP technologies and inevitably break down in the face of meaningful disputes about control over property, beliefs and freedoms.

The final setting of the scene piece for the thesis is the realisation that Sapiens do not like going to war and killing each other. In fact all the PPP and APP technologies we have developed are to prevent war. Fun fact, the first intercontinental ballistic missile was called 'The Peacemaker', which implies it was developed to bring peace. The result however is the opposite, we tend to put off warfare for too long so that when it does happen it is at a catastrophic scale.

What Sapiens need, the Major suggests, is a way to conduct regular, non-lethal warfighting to settle disputes in a way that doesn't involve either side having to trust the other. He notes that many animal species have developed such protocols. He cites the example of deer antlers, which are used in frequent physical battles for control, without fatal consequences to the participants.

Softwar

The Major, in this thesis coined the term 'Softwar.

In explaining this he asks the reader to consider the power of the written word. How much it influences us (Shakespeare, The Bible) and controls us (Newspapers, Rules and Laws). He reminds us that computer code is just another language, a syntax which influences us (Google) and controls us (Facebook). However, unlike human to human language, which everyone can access, computer language (Software) is understood and controlled by a comparatively small number of people. He likens software billionaires to modern day god kings like Egyptian pharaohs (who would have dreamed of having as much power!).

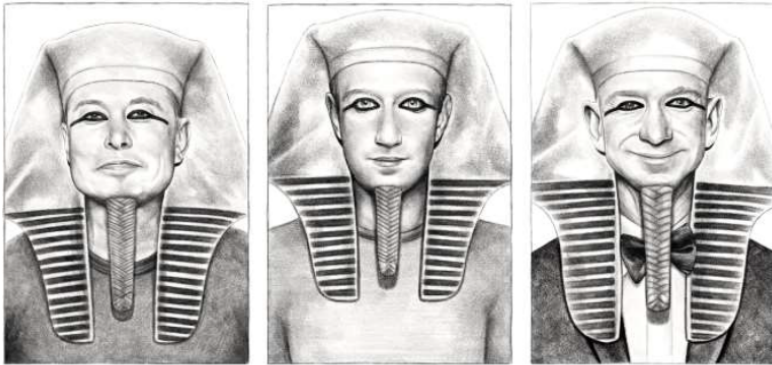


Figure 63: Software Administrators with Abstract Power over Digital-Age Resources

The asymmetric power of these god kings is largely unchecked. Individuals, corporations and even nation states have little to no influence or control over the software created and owned by centralized companies. The ability of Twitter (the townhall of the internet) to block a President of the United States of America from its platform, at the push of a button, is an illustration of the power of software and their controllers.

Thus far the power exercised by software controllers has mainly been harmless. They tend to operate within a self imposed US centric social construct. It's in their commercial interests to do so. But what if it

wasn't? What if nation states with different cultural and ideological beliefs grow their power via software. The Major suggests that cyberspace represents a new kind of shared abstract belief system and that there is nothing to prevent predators from exploiting the humans that are using the system.

The Major feels that '...the future of national security is cybersecurity...'. What he believes is needed is a software that can be used within cyberspace to increase the Cost of Attack (Ca), in the same way that military hardware increases the Ca in the sea, land, air and space domains. The Major theorises that Bitcoin is such software and as such it is the world's first and perhaps only cybersecurity weapon.

Bitcoin as a Cyber Dome

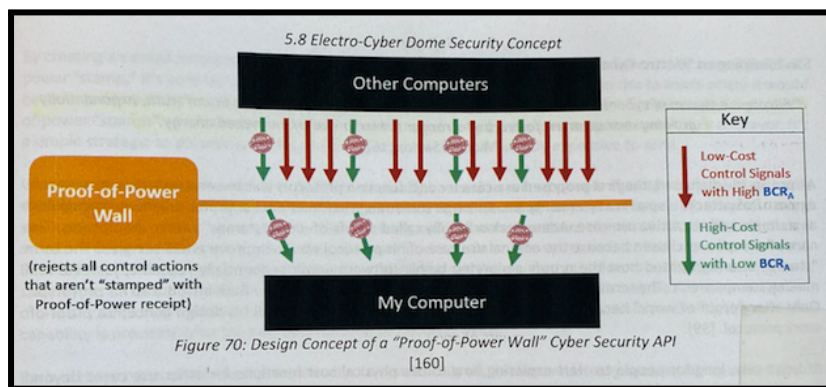
In order to attack a computer, the attacker needs to send a signal to that computer. The current method of keeping unwanted signals out is to code the computer with security systems. Thus far this has not worked very well as there are always ways to work around a system.

Computer scientists have been aware of the limitations of encoded defensive systems since the early 90ies. One of the ideas floated over the years has been to invent an email version of 'Registered Mail'. The benefit of Registered Mail is the guarantee of delivery. But there is also a cost benefit. No one uses Registered Mail for junk mail, the cost would be prohibitive, this is a benefit for the receiver of mail. If email could have a cost imposed on it by the receiver, junk email would become a thing of the past.

A signal by a hacker to a target computer is a form of email. If the target computer could impose a cost on signals sent by hackers, the Cost of Attack (Ca) would increase. Furthermore, because we are in cyberspace, this Ca could be increased in an unlimited way that would make it virtually impossible to send attack signals.

Computer engineers were working to implement a Registered Email system more than fifteen years before Satoshi Nakamoto released the Bitcoin Whitepaper. Indeed Adam Back, who is mentioned in the Whitepaper, released his own form of Registered Email (aka Proof-of-Work protocol) in 1997. The Major thinks of Bitcoin as a Registered Email system because a fee must be paid by the sender for each bit of information (which we call Bitcoins) sent across the Bitcoin network.

The cyber dome idea is that all computers requiring security can be behind a paywall which can only be accessed by the sender paying for the signal. Furthermore, it could be the receiver that sets the level of the fee.



If computers can be secured with a Registered Email system. They can also be attacked by those who have the access to the tokens used to unlock the paywall. The Major's thesis is

that Bitcoin could be that token. In other words, a sender of a hacking signal will need to attach a small piece of Bitcoin to each signal they send in order to attack the target computer.

The defensive aspect here is to increase Ca by adopting a paywall around computer networks. The offensive aspect is to accumulate Bitcoin to facilitate attacking an enemy's computer systems. More on this later.

Bitcoin as the Cyber 'Peacekeeper'



'The Peacekeeper' Intercontinental Ballistic Missile has, in a way, kept the peace. But peace is fragile and there is always the threat of a nuclear on nuclear mutually assured destruction 'mistake'.

Understandably the Major spent a significant amount of time in his thesis explaining the evolution of kinetic warfare technologies. I do not need to go into that here, but what we do

need to appreciate is that we have reached the ceiling whereby kinetic warfighting, between nuclear powers, is no longer a way to settle disputes where diplomacy has failed.

Kinetic warfare is a fight for control over territory where there is zero trust between the parties. Each party does not need the permission of the other to conduct warfare and each party is decentralised from the other. These decentralised parties are the 195 countries of the world.

In Bitcoin there is a competition for control of the network every 10 minutes. There is no trust between the parties competing for control, permission is not required to join the competition and the competition is conducted by decentralised computers in thousands of locations throughout the world.

The Major theorises that the operation of the Bitcoin network is analogous to kinetic warfighting. Both are trustless, permissionless and decentralised competitions over control of precious resources. The significant difference is that Bitcoin is not fatal to the loser. Bitcoin is a softwar platform where humans can compete for control without the need for diplomacy and without lethal consequences.

If as a reader you are still with me on this the question you may have is...how does a Softwar prevent a kinetic war?

The Cold War is an example of the idea the Major is getting at with his Softwar thesis. The Cold War was not a kinetic war with catastrophically fatal



consequences, yet it changed the geopolitical order within Europe, reunited Germany and created 11 new nations.

Softwar is a way to scale the benefits of the Cold War. The Major does not hold back on his views here, he theorises that Bitcoin breaks the dangerous and fragile stalemate we have reached with kinetic warfare and offers humanity a method to settle disputes in a trustless environment without fatal consequences. This he states leads us away from mutually assured destruction towards '...mutually assured preservation'.

Connecting the Metaverse with Reality

The link between cyberspace and the physical world is stronger than it first appears.

Freedom of navigation throughout the world's oceans and access to trade routes is one of the main functions of power projection technology called the Navy. It would be unacceptable to everyone if the Ocean was owned and controlled by one entity or a handful of entities. Cyberspace can be thought of as an ocean linked together by a network of computers. Humanity's most valuable information moves across the cyber ocean, yet, unlike the physical ocean, access to the cyber ocean is permissioned and censorable.

One example of this is the Society for Worldwide Interbank Financial Telecommunications (SWIFT) network. SWIFT is a part of cyberspace, it controls an estimated USD 5

trillion worth of transactions each day. These transactions are tied to real world physical goods and services. By kicking Russia out of the SWIFT system they have effectively blocked Russia from the ocean.

Entertainment networks like Netflix are another example where the make believe world of the metaverse links directly to real world movie studios, advertisers and subscribers. When we think about it we are connected in cyberspace through the internet in every aspect of our lives.

If the technical theories in the Major's thesis are valid, Bitcoin may represent the '...first truly zero-trust, permissionless, and egalitarian digital trade route in cyberspace that nations may come to rely upon to exchange their most valuable bits of information.'

At present, most of the networks we rely on for finance, trade, entertainment, social engagement and the like are controlled by centralized parties that we trust to uphold 'western values' and the rule of law. But this will not always be the case. The cost of attacking (the Ca) these networks is very low and as they become more beneficial the Benefit to Cost ratio (BCRa) increases making them vulnerable to attack. The cost, for a nation state, to use a platform like Facebook to attack a democracy's Abstract Power Projection apparatus, such as the free press, the right to vote and the independence of the judiciary, is very low.

Think Different...Embrace New Paradigms

It is very difficult to think differently. But this is what we must do if we are to grow.

The Major challenges readers of his thesis to change the name of Bitcoin to Bitpower. I already have a headache at this point...but read on.

The Major puts forward the theory that by calling this technology Bitcoin, it helped the early adoption and development of the software. Bitcoin, as money, is more exciting than Bitpower as a cybersecurity system. He goes on to suggest that as the system is now widely developed, it should be called by a more descriptively accurate name, Bitpower.

There are a number of benefits of changing the name.

Firstly, it reduces the emotive elements of debates tied to money, monetary policy, securities law, money transmittance laws and the like.

The Major believes the analysis of strategic importance of this technology should not be in the hands of the Department of Treasury and the Federal Reserve, instead it should be under the purview of the Departments of Defence and Homeland Security.

Secondly, it highlights the Proof-of-Work aspect to the technology which is fundamental to its value as a cybersecurity system and is in contrast to Proof-of-Stake and other distributed consensus protocols.

In explaining the importance of nomenclature, the Major draws on another lesson in history. The emergence of a black powder used for medicinal purposes for centuries before enabling technology in the form of an iron gun barrel manifested a new use case for the powder, now known as gunpowder. With many examples like this, the thesis helps readers with the mental leap in nomenclature from Bitcoin to Bitpower.

Bitpower is a non-metaphorical name, it's descriptive of what the bits represent. Power. Power in the sense that it took power to produce the bits and power in the sense that the bits can be used to project power in and through cyberspace.

Think about this last comment...'project power through cyberspace' to secure property. The Cost of Attacking (Ca) the Bitcoin network is many many billions of dollars. The Benefit of Attack (Ba) is hard to measure because if it's destroyed it's worthless. A nation state may see value in rendering it worthless but that value is impossible to quantify. Even if an attack resulted in a double spend. The miners could fork the chain leaving the corrupted double spent chain to 'die on the vine' so to speak. Bitcoin would continue on the uncorrupted chain. The BCRa of Bitcoin is extremely low, which is exactly what is needed for a cybersecurity system.


Bitpower is Extraordinarily Valuable

Here the Major introduces readers to an important feature of Bitcoin that I have never seen articulated in this way. To understand

this we have to understand the theory of what is known as 'Gabriel's Horn Paradox'.

The theory is that the geometric shape of a horn has special mathematical properties. The volume of space inside the horn is fixed, but the surface area of the horn is infinite. This is illustrated below.

(10 points) *Gabriel's Horn* is defined to be the region obtained by rotating the region below the graph of $f(x) = 1/x$ from $x \geq 1$ about the x -axis.



(a) Show that the horn has finite volume.
 (b) Use the formula $\int_a^b 2\pi f(x)\sqrt{1+[f'(x)]^2} dx$ for the surface area of a solid of revolution rotated about the x -axis to show that the horn has infinite surface area. See § 7.5 for details on how this formula is derived.

In other words, "Gabriel's horn can be filled with paint, but it cannot be painted!"

The Major states that the Bitcoin protocol has the same paradoxical behaviour as Gabriel's horn. Bitcoin supply has a fixed volume (21 million), yet it can scale to accommodate any number of users and any amount of real-world power, or real-world value. I have considered this before in relation to the price of Bitcoin and I have seen merchandise advertising this property, but I have not seen it supported by mathematical theory as Gabriel's horn.



What is My Take on this Thesis?

My dear wife Anne, cautioned me against sharing the ideas in this thesis with clients in fear that people will think I have lost my way in some cult. I definitely took a pause, but because of who the author is and his job description. I definitely wanted to share his thesis with my fellow investors. So here is my take on it all.

The Proof-of-Work vs Proof-of-Stake aspects of the thesis are fundamental to the whole thesis. The Major is not at all a fan of PoS. Indeed the whole thesis is predicated on the basis that PoW is the breakthrough technology, not Bitcoin per se. I would love to hear Vitalik's counter argument to this thesis.

I know my limitations. I do not have the highly technical, detailed and multi-disciplined knowledge to have a strong conviction on which of these technologies will have the most impactful benefit to humanity in the long term. I do however have a high level of conviction that these technologies are incredibly significant and that people working on them have the right skills and motives. This is why we have a good weighting across both Bitcoin and Ether in our portfolio. We are so early in this space, we are in 1920 in terms of the aircraft and in 1994 of the internet. It absolutely makes sense not to back a single technology at this stage.

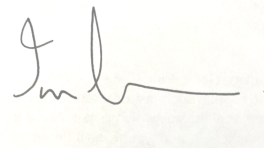
We will have to have to wait and see the extent to which the ideas in this thesis gain

traction within the US Military establishment. Apparently the Major is held in high regard and is well supported internally. But it is highly possible that incumbents will fail to act or will deride his thesis. It is more likely that certain powerful members of US Congress will pick up the direction and push for adoption.

In any case, this thesis does not undermine the concept of Bitcoin as sound money. As hodlers of Bitcoin it is tantalising to think that it is even remotely possible that we are investing in an asset which could become a military grade cybersecurity system adopted by global superpowers. All of whom - if the theories in the thesis are valid - will need to own Bitcoin at scale.

As always, please do not hesitate to contact me on 04 5090 0151 or at ian@bca.fund if you have any questions.

Best Regards



Ian Love
Founder and CEO
Blockchain Assets Pty Ltd

To the extent that any of the information which we have supplied to you may be deemed to be "general advice" within the meaning of the Corporations Act, we draw your attention to:- (a) in preparing, supplying or conveying such advice, we did not take into account your investment objectives, financial situation or specific needs; and (b) (before acting on the advice) the need to consider, with or without the assistance of an authorised representative, the appropriateness of the advice having regard to your investment objectives, financial situation or specific needs and any relevant Information Memorandum.