

THE BITCOIN DEBATE

SMF GETS THE BIT BETWEEN ITS TEETH

Is Bitcoin a serious challenger
to commodity currency?

Is it an engineer's naive solution,
conspiracy theorists' cause or
a truly global currency?

SAINSBURY MANAGEMENT FELLOWS



ATTENDEES

Bitcoin Members Networking Dinner | Thursday 18 September 2014 | Sofitel Hotel London

Mr David Bevan
Non-Executive Director
Oxford Policy Management

Mrs Cathy Breeze
Director of Communications
Sainsbury Management Fellows

Mr Adam Cleary
Director
Founder of Bullion Bitcoin Ltd

Mr Paul Dolan
Process Manager
Mustang Engineering

Mr Chris Earnshaw
Chairman
BRE Group

Mr David Falzani
CEO
Polaris Associates Ltd

Mr Peter Hanley
Systems and Safety Assurance
Engineer Real Safety Today

Mr Michael Hill
Vice Chairman
Barclays Bank PLC

Mr Andrew Hogwood
Innovation Director
independent

Mr Ali Korotana
Sainsbury Management Fellows
*MBA Candidate – London
Business School*

Mr Nick Laird
Head of Sales and Marketing
Ceridian

Mr Alastair Light
Head of Strategic Planning
BT

Mr Toby Mace
Business Development Manager
X-on

Mr Daniel Neal
Programmer
EvoEnergy

Mr David Rickwood
Sainsbury Management Fellows
LBS

Dr Tom Robinson
Chief Operating Officer
Elliptic

Mr Chirag Shah
Executive Director – Procurement
Xchanging

Mr Christopher Shepherd
Sainsbury Management Fellows
*MBA Candidate – London
Business School*

Mr Mike Sotirakos
CEO
Watershed

Ms Althea Taylor-Salmon
Managing Director
Fortune PR

Mr Peter Varnish OBE
Non-Executive Director
BlueStar Capital Ltd

Mr Henning von Spreckelsen
Chairman
Shere Investment

Ms Nicola Winn
Global COO Finance-Infrastructure
Deutsche Bank

Mr Andrew Layton
Director
Kanmore



AN INTRODUCTION TO BITCOIN

Adam Cleary, Director of the
UK Digital Currency Association
and Founder of Bullion Bitcoin

Bitcoin is an internet currency. It is a protocol that enables the transfer of value directly from person to person on a decentralised trust-less basis. There is no central authority or issuer. The code – the protocol – is open source; it can be viewed by anybody and is maintained by a community of mostly volunteers.

Bitcoin is held in a wallet that is controlled by the user on a personal device, or on a web wallet on the internet and is secured by cryptography. Each address has a public key and a private key – the public key is published and the private key is kept secure. Putting the two keys together unlocks the Bitcoin and permits access and transmission to the holder of the private key.

The genius of Bitcoin is that by design it is decentralised allowing for trust to be distributed. You don't have to trust any central authority and if one or several nodes in the system breaks, this will not bring down the whole system.

This distributed trust idea is achieved by the introduction of a blockchain, a public ledger where transactions and holdings are recorded, and new transactions are confirmed independently and continuously by network participants known as miners.

Continued

The genius of Bitcoin is that by design it is decentralised allowing for trust to be distributed



Miners are seeking to harvest newly created Bitcoins by a mining process that involves verifying Bitcoin transactions in the network while at the same time seeking to solve a mathematical algorithm to find a specified value. Finding this value unlocks the current block and releases the newly created Bitcoins. The protocol releases Bitcoins at a predefined rate which adjusts automatically depending on the amount of mining participants on the network. If there are a lot of miners, the difficulty rises and if there are fewer it falls. The total number of Bitcoins is capped at 21 million and to date some 13 million have been mined. The rate at which they are to be issued is scheduled to fall progressively over time until they reach the cap, sometime in 2140. Bitcoin is deliberately designed to be deflationary as well as decentralised and trust-less.



In scientific terms the invention of Bitcoin and the blockchain has provided a solution to the [Byzantine Generals' Problem](#), which is an agreement problem in decentralised systems. The problem is that transactions or instructions which originate remotely cannot be independently verified without reference to a central authority.

To overcome this, Bitcoin miners work in parallel to generate a chain of pieces of data that are costly and difficult to produce. Generating a piece of data, which is known as the proof of work, is difficult – even with all participants working at once it takes ten minutes before one of them finds a solution and broadcasts it to the network. Once a solution is found and broadcast, everyone adjusts their computations to include the winning solution so that when they find the next proof of work, it chains after the previous winning solution. Anyone who is working on a different chain, or plan, will switch to this one because the proof of chain is longer.

This proof of chain work – the blockchain – is the key to overcome Byzantine failures, and to reach a coherent global consensus of the system state without any central authority and without trust between participants. A consequential element of it being distributed and decentralised is that it is intended to be immune to plenary power shut down and strong enough to sustain an attack of outside computational power.

If one believes in the inherent superiority of fiat currency, we have to consider that 99% of fiat currency claims are actually digital or virtual money tokens just like Bitcoin. It's just that fiat currency balances are listed in a centralised ledger of a bank, rather than being held as Bitcoin balances on a decentralised ledger like the blockchain. The amount of fiat currency with an actual physical representation is extremely small and represents a paper receipt representing an irredeemable digital balance at a central bank. Fiat currency derives its superiority/value from nothing more elevated than centralised legal tender laws that enforce its acceptance.

By contrast Bitcoin derives its value from the network consensus that it has value, there is no compulsion. The more people conclude that Bitcoin has value, the larger the network effect and the higher the value – there is no dictat.

David Falzani, President of Sainsbury Management Fellows welcomed guests and opened the Bitcoin Debate



Bitcoin is the most radical currency development in the modern age, but is it an engineer's naive solution, conspiracy theorists' cause or a truly global currency? At first glance, Bitcoin may not seem a natural debating topic for a charity that awards MBA scholarships. However, being advocates for combining human endeavour with technology and business skills to bring about advances and economic growth in society, Bitcoin epitomises our ethos.

Why has this revolutionary currency been devised and become popular? To a certain extent, it is because people have lost faith in governments and financial institutions. In response, entrepreneurial engineers have used their ingenuity and skills to invent a standalone, parallel financial system.

Whilst Bitcoin is an exciting development, the advent of a new technology in itself does not mean that the underlying problem that led to its birth has been solved. It could be said that the fundamental problems that inspired Bitcoin are deep rooted weaknesses in the financial industry – none of which are intrinsically linked to technology.

The global financial failures we have seen are linked to regulation and human behaviour, the latter of which has involved malfeasance and fraud.

To appreciate and maximise the potential of Bitcoin, we need to look at it holistically, not purely technologically. An analytical response demands that we go beyond entrenched positions and look dispassionately at how this new technology fits within the context of regulation, people's behaviour, benefits to society and the risk of crime. These things are all interconnected, so we need to understand what we are trying to fix and what else may be in the system that needs to be discovered and tackled.

Bitcoin presents a unique opportunity to explore what needs to be fixed in the current financial system. But, is Bitcoin itself sufficiently robust to resist the vagaries of the established system and become a mainstream currency? Only time will tell.

The SMF debate set out to explore the different views on Bitcoin held by a wide spectrum of people, ranging from an enthusiast and entrepreneur to an economist and professionals working with Bitcoin. Whatever your position, we hope you enjoy the discussion and we welcome your feedback.

Is Bitcoin sufficiently robust to become a mainstream currency?



THE SMF BITCOIN DEBATE

Chair's Opening Statement



Sainsbury Management Fellows combined its recent Members' Dinner with a sparkling debate on Bitcoin, the world's first decentralised digital currency.

Chaired by Michael Hill, Vice Chairman at Barclays Bank PLC, the distinguished speakers tackled the question *Is Bitcoin an engineer's naive solution, conspiracy theorists cause or a truly global currency?* giving their insight and take on the pros, cons and prospects for Bitcoin in the future.

The speakers were Adam Cleary, Director of the UK Digital Currency Association and Founder of Bullion Bitcoin; Dr Tom Robinson, Chief Operating Officer of Elliptic; academic/economist, David Bevan who is a Non-Executive Director at Oxford Policy Management; entrepreneur and Sainsbury Management Fellow Henning von Spreckelsen; and Daniel Neal, a software developer at EvoEnergy and a Bitcoin enthusiast.

Banking is ripe for significant technology change

Before opening the debate to the speakers, the Chair briefly touched on the topic *What is Bitcoin?* and followed with a swift journey through the history of currency, from bartering to gold and silver coins, then notes that represented the value of gold to our existing paper currency. Bitcoin, he said, is a natural extension of the currency evolution.

The Chair continued, *"Banking is ripe for significant technology change. It has lots of legacy systems; is highly fragmented and highly regulated. Because of this, technology is beginning to be applied across many aspects of the business, from internet banking to payment apps on mobile phones and Barclay's Pingit system to Bitcoin."*

"On the plus side Bitcoin is fast, easy and inexpensive to operate; it is a very efficient system. It is secure and not influenced by central bank policy. On the downside, Bitcoin has no intrinsic value like paper currency and has seen large volatility in observed value – in any one day it can move a large amount and unlike paper currency, Bitcoin has not had a real test of confidence."

"Paper currency is seen as valuable because we believe we can spend it today and tomorrow, hence we have a lot of confidence in it. Even though it has been through significant stresses, including two world wars and hyper inflation in some countries, still we have complete confidence in paper currency."

"Bitcoin has not yet had a major test, where for example, someone works out how to replicate them. There's no such thing as a perfectly secure system. What if a huge volume of Bitcoins were stolen or someone figures out how to abuse the mining system that generates Bitcoins? We don't know where the risks may come from and no one really knows what will happen if such a test occurs. The other key issue is that currently Bitcoin is unregulated – if the currency becomes big, it will have to be regulated, which will increase costs."

The Chair then invited the first speaker, David Bevan, to give his perspective on Bitcoin and respond to the debate question.



Academic and economist David Bevan kicked off the debate with his view on Bitcoin versus fiat money

Economists' usual approach is to list three functions of money; as a widely accepted medium of exchange (to make payments), as a low-risk store of value (to bridge over time), and as a unit of account (to measure value).

Bitcoin goes some way to satisfy the first, and is an efficient means of exchange amongst the currently very limited number of partners willing to accept it. However, its credentials for the other two functions are very weak. What determines the worth of a Bitcoin? It's what people think it's worth! This self-referential character has made its value extremely volatile in the past and prone to collapse in the future.

This is in contrast to fiat money created by government, which is underpinned by central banks' obligations to maintain the value of currency, as well as by the fact that it can be used to pay taxes. Many Bitcoin enthusiasts hanker after a return to the gold standard, but gold at least has alternative uses, which place a floor on its value; there is no parallel with Bitcoins.

While the usual approach is accurate as far as it goes, it fails to stress the real importance of money, which is that it is a crucial social invention, the technology of transferable credit – a system of generalised IOUs which underpins the credit system. The rest is just a system of tokens, to keep track of the underlying credit and debt relationships.

The overwhelming bulk (97% as at end 2013) of the money supply is in the form of bank deposits. There is a widespread misapprehension as to how this system works; it is commonly believed that deposits placed with the banks permit them to extend credit. In fact, the converse is true; when banks see fit to extend credit that creates deposits.

Bitcoin functions very differently; it is not part of the credit mechanism, and it is very hard to see how it could become so without losing the special features, such as decentralised anonymity, prized by its proponents.

Much of the debate around Bitcoin has been driven by distrust of government, and the dangers of allowing it discretion. Hence the enthusiasm for automatic, non-discretionary creation of Bitcoins. However, while it is true that there are dangers in unbridled discretion, there are also dangers in rigid and unresponsive mechanisms. The sensible answer has to be for what has been called 'constrained discretion', where discretion is delegated but bounded, and that has been the thrust of institutional developments in recent decades. It is very important not to confuse the payments mechanism, which is not in bad shape, with all the baggage from the financial crisis, where much remains unresolved. From the perspective of the payments mechanism, Bitcoin is an irrelevance, though on its past record, it seems plausible that central banks may steal some of its very clever and innovative technical clothes.

What determines the worth of a Bitcoin? It's what people think it's worth!



Adam Cleary

Director of the UK Digital Currency Association and Founder of Bullion Bitcoin

I suggest that Bitcoin can be understood as a reaction against hierarchy, the highly unsatisfactory international monetary system, sub-optimal financial system and centralisation of power. This is perhaps counter intuitive for an internet currency protocol centred on mathematics and internet cryptography but I think the emergence of Bitcoin and its associated technologies represents a desire to return to a more human, more decentralised world.

Why would we need a new currency for the internet – aren't the existing ones satisfactory? They work advantageously if you are a highly leveraged borrower, a financial institution or a government, but not generally otherwise.

The current system, I believe, rewards leveraged speculation in assets at the expense of work, debt at the expense of thrift, consumption at the expense of saving, the old at the expense of the young and large centralised organisations at the expense of small businesses. There is a plethora of regulatory obstacles to prevent the emergence of challenges in financial markets and to prevent the decentralisation of power. What is most destructive about the existing system is the international monetary system, which has exponential debt creation and money printing coded into its DNA.

In discussing the international monetary system, it's helpful to retreat a little in time and recall the monetary system we once had in the 19th century and in various forms up until 1971. Once we had a system where gold was money and all issued money was redeemable into gold at the fixed ratio, this was generally known as the gold standard. The gold standard in its various forms was designed to prevent the abuse inherent in monetary arrangements that had no numerical restraint on the amount of debt promises that could be issued by the financial system. This system was overturned in 1971 and replaced with the fiat system where currencies have no intrinsic backing.

Bitcoin represents a desire to return to a more human, more decentralised world



Adam Cleary
Director of the UK Digital Currency
Association and Founder of Bullion Bitcoin

Bitcoin is known as digital gold and its creator had in mind the advantageous features of gold, intending that the monetary system centred on Bitcoin and the blockchain would avoid the exploitative relationships that characterise the existing debt-based financial system. For example, Bitcoin is coded so as to be scarce, its stock increases through mining at a progressively slower rate and then stops entirely, it has high marginal utility (so a Bitcoin mined five years ago is identical to one mined today), it is easily divisible and is no one's liability as there is no central authority issuing irredeemable promises.

Like gold, Bitcoin is decentralised free market money. In this view, Bitcoin is both complementary and similar to gold. Both are a representation of a human desire to have sound money, a yardstick in which value can be stored over time and space and can be freely exchanged with other human beings free from control by a central authority.

The reason that gold was considered desirable is that it was felt that otherwise private banks would monopolise the issue of money and everything would be debt based, currencies would be permanently debased in real terms, assets would flow into the richest segments of the population and there would be huge speculative bubbles throughout the financial system.

It wasn't until 1971 that we managed to free ourselves from these ideas and since then financial systems have not been an enlightened oasis of stability untouched by roller coaster speculative bubbles. There has been a roll call of crises under the current system.

As far as I can discern the vast majority of economic commentary is a discussion around who should print more money faster. There are no schools of economic thought arguing that money printing is undesirable or damaging – the entire argument is about the form and speed of money printing – fast, exponential, parabolic.

Do we want inflation or not? Our answer is no, we do not, but it is apparently universal consensus that deflation is a bad thing. But I and Bitcoin advocates generally believe this is wrong. The inflationist view is always advocated by people who represent the government and the banks.

The government loves inflation because it reduces the real value of government debt and allows government to tax increases in wages, rents and prices. Financial institutions like inflation because they are similarly highly leveraged. Inflation encourages debt over consumption and rewards speculation.





By contrast, deflation:

- raises the real value of the wages of most of the population
- reduces the prices of the average consumer goods basket
- encourages savings, prudence and thrift

Most people should welcome deflation, only banks and governments should fear it, that is why there are no public calls for deflation. Instead we have central banks preserving the inflationary dynamic at any cost. Bitcoin was deliberately designed to be deflationary to counter the narrative of inflation, to restore purchasing power to 90% of the population who cannot successfully day trade.

The question is why has money printing not resulted in hyper inflation at retail price level, since there is certainly hyper inflation in asset prices? I think this is because rather than printing currency, we now recycle debt claims into gigantic financial markets that live in a parallel monetary plane almost entirely divorced from real economic activity carried out by real human beings.

Financial claims are trapped into a closed circular icecap from which only the privileged few can extract serious money. Gold has been demonetised so that response is closed to us, instead we are compelled to trade in debt. The pyramid of accumulated paper promises that has built up is now so large that it could never be repaid from human effort or even serviced because there are not enough income generating assets in the world to service the interest burden at any interest rate above zero. Instead this growing burden

of debt must be relentlessly and forcefully monetised at ever lower interest rates. Now we are at the lower bound, this will soon be unsustainable.

Bitcoin is a reaction to all other reasonable alternatives having been closed off by the remorseless logic of the existing self-imposed system. It is an attempt to design an alternative monetary and financial system based on sound money.

Concurrently, the emergence of Bitcoin is also driven by the fear that the financial system is so centralised, yet so fragile that if it were to implode there would be nowhere to hide, nowhere to express economic calculation or transfer value through established payment systems. This fragility can be identified in the balance sheets of the largest too-big-to-fall banks. It is unthinkable to consider that these banks could go bankrupt, but remember that Lehman Brothers and Bear Stearns went bankrupt just six years ago.

Every time we cover up the inherent inbuilt insolvency in the system, with more printing, we compound the risk of a devastating crisis that will result in a disorderly unwinding of the existing international monetary system. The societal problem is that these manifestly overly leveraged entities are in control of the payment system that control transfers between real people who hold current and deposit accounts. Because of this it is argued that it is essential to support the banks regardless of societal costs.

Bitcoin was created to provide a solution to this. By enabling peer-to-peer payments directly from human being to human being, there is no longer any need for chains of intermediaries to provide and control the payments and clearing network. The central function that banks provided as centralised trust repositories is no longer necessary, accordingly it is of paramount importance to re-design national and international payment networks to take account of this reality and to exclude the danger of payment networks being disrupted as a result of the insolvency of its main participants should there be a repetition of the 2008 financial crisis.



Dr Tom Robinson
Chief Operating Officer of Elliptic

Elliptic bridges the gap between traditional finance and digital currencies, transforming the way that money is used. Elliptic provides enterprise-grade insured storage for Bitcoin holdings

Bitcoin cannot be thought of or used in the same way as a currency

First to answer the questions posed – yes Bitcoin is an alternative to fiat currency, is indeed an engineer's naive solution, yes it is or has been a conspiracy theorists' cause (although it is breaking into the mainstream), and no it probably isn't going to be a global currency in the traditional sense of the word. But I think that Bitcoin is all the better for each of these being the case!

As you know, Bitcoin has received widespread attention as a revolutionary way of transferring value over arbitrary distance without the need for a trusted intermediary. It is for the transfer of value what the internet is for the transfer of information. There is huge scope to reduce the cost of cross-border payments, increase access to financial services in developing countries and enable such things as machine-to-machine payments and micropayments.

Even then we are only just scratching the surface – Bitcoin can be programmed using its own scripting language, so that transactions depend on external factors. So for example you could have complex derivatives hard coded directly within a Bitcoin transaction which are settled automatically, without the need for an intermediary.

However, I think that we have to recognise that when Bitcoin is used in this way it is not a currency. I think that the biggest mistake Satoshi Nakamoto made when he invented this technology was to call it Bitcoin. And that's because users, regulators, businesses and economists are thinking about it within the narrow definition of a currency and are trying to fit it within frameworks that do not suit its unique properties.

Bitcoin does have some properties of a currency – it is a reasonable store of value and medium of exchange. But it is also a fixed supply and importantly it is not fungible. Every unit of Bitcoin has a history, made available for everyone to see in the blockchain ledger. Every pound coin in my pocket (assuming it's not counterfeit) has the same value. The same cannot be said about every Bitcoin.



For these reasons Bitcoin cannot be thought of or used in the same way as a currency. But that's not a bad thing – it just has different properties – it's a different way of transferring value that will suit different applications. And it's also much more than just a means of transferring value.

If you look at the core technology what you have is a distributed digital asset register, together with a protocol for transferring ownership of those assets in a secure, transparent way, without the need for a trusted intermediary. Those assets could be anything – shares in a company, bonds, property, commodities. This opens up enormous scope to transform and streamline the way we transfer ownership of and manage these assets.

For instance take the example of a company issuing shares. The company could make a legal link between a share and a particular unit of Bitcoin. The ownership of these shares can then be transferred in an efficient, low cost and transparent way. If you have that unit of Bitcoin in your Bitcoin wallet, you own that share. If dividends are payable, this could be processed by simply sending the appropriate number of Bitcoins to those wallets that contain shares.

Now as someone running a Bitcoin business, the regulatory response to this technology is of great concern. Appropriate regulation could bring legitimacy and mainstream adoption to our industry, but if it oversteps the mark it could stifle innovation.

What I hope is clear from the breadth of potential applications is that the technology itself should not be regulated. Each application of the technology will have different risks and it's still too early to know what applications will arise. In 10 years time will I be using Bitcoin to pay an employee or to represent my mortgage?

This is a real risk – the European Banking authority has suggested that Bitcoin itself should be regulated, with a legal entity controlling it and responsible for it. This would defeat the entire point of the decentralisation that defines Bitcoin!

However, there are areas where regulation is appropriate and could be very beneficial. At Elliptic we provide services that bridge the gap between traditional finance and digital currencies – our Elliptic Vault product is the world's first insured Bitcoin storage service. As custodians of digital assets, we believe that we should be subject to similar regulations and controls as other financial services firms – such as capital requirements and client asset controls. As things currently stand, companies such as ours are completely unregulated, which is extremely risky, as illustrated by the collapse of Mt Gox and the loss of nearly half a billion dollars of customer assets. There is a real need for consumer protection measures. However, other digital currency services do not have direct analogues in the traditional financial world – here bespoke regulations will be needed, which will take significant time to implement.

As a stop-gap measure I hope to see the UK government bring gateway Bitcoin businesses such as exchanges and vendors, within the remit of the money laundering regulations. This would give much needed legitimacy to Bitcoin and also help to mitigate a real risk.

It could be claimed that Bitcoin is a UK invention. The public key cryptography that underpins it was first developed at GCHQ in the 1970s, and Satoshi Nakamoto, its anonymous creator, is rumoured to be British. The UK has a regrettable track-record of failing to exploit its inventions – from CT scanners to the World Wide Web. But with its Fintech talent and standing in traditional finance the UK has a fantastic opportunity to establish itself as a global hub for Bitcoin, as long as it gets the regulation right.



THE ENTREPRENEUR'S VIEW

Henning von Spreckelsen Chief Executive, Shere Investment and Non-Executive Director, Square Rig covered three key points:

First, the historical perspective of 1920s Germany where fiat currency became worthless as Germany printed money to pay for reparations:

The stock market boomed due to rampant inflation (like now) and there was no real store of wealth. As soon as the printing of money stopped (temporarily) this led to a collapse in stock market to be reignited when printing of money restarted.

- This rings a bell with what is happening now with quantitative easing
- Cigarettes became currency post war in the refugee camps
- Could Bitcoin be the new cigarettes or external currency that has a value due to governments not being able to print it?

Second, from a tax collection point of view – with a wildly oscillating exchange rate:

If transactions for companies are done in Bitcoins and at some point tax is charged, you need to determine the point at which the Bitcoin is re-valued to local currency to pay taxes – this is an extreme problem for governments to collect taxes in this form.

Finally, there will need to be a defacto standard or some verification process – maybe itself open to abuse, that the Bitcoin owned by a company is valid:

At the moment you get some sort of guarantee from the bank/government for fiat currency. If someone steals your Bitcoins (Mt Gox), how do you get them back?



THE FINAL WORD

Software Developer at EvoEnergy and Bitcoin Enthusiast Daniel Neal

Bitcoin is a reaction to the 2008/9 financial crisis – it is not just a currency but a solution to a problem in the banking system.

Bitcoin is an engineer's solution: while lots of work is being done on monetary reform and changes in regulation are being made, these tend to be complex and legalistic. Also, just because something is against the law doesn't mean it won't happen. Commercial banks handle trillions of pounds every day. They have the power to create money. There is huge potential for abuse of trust there.

It is not just about the odd scandal (like LIBOR). While incentive and means remain, it will keep occurring. It is systemic.

Bitcoin is different. Bitcoin builds the trust aspect right into the core code so everyone can see how it works. We can see the way money is created and transferred because it is completely transparent. We do not have to rely on the law, but mathematics.

An engineer's naive solution? Yes.

Though it sounds like an insult, I believe naivety is the exact quality that allowed Bitcoin to be created in the first place.

The scope of Bitcoin is so epic – a modern day Noah's Ark for the financial system – that if the creators had the wisdom of experience; if they were realistic about how much work it would be to create and how unlikely it would be to succeed, it would have been easier to give up than to do something so radical.

Naivety is part of Bitcoin. It is part of the solution. It allows us to attempt the impossible.

Bitcoin builds the trust aspect right into the core code so everyone can see how it works



MORE ABOUT OUR DEBATERS



Chair

Sainsbury Management Fellow, **Michael Hill** is Vice Chairman at Barclays Bank PLC, where amongst other things he is involved in developing and delivering the bank's community investment strategy.



Academic/Economist

David Bevan, NED at Oxford Policy Management and a Fellow of St John's College, Oxford. David has worked for the British government on energy, in Kenya as an ODI Fellow and was a founder and Deputy Director of the Centre for the Study of African Economies at Oxford. He has been a visiting scholar at the IMF and is a member of the Fiscal Affairs Department's panel of fiscal experts. David's main research interests are in public economic and macroeconomic policy analysis.



Serial Entrepreneur

A Sainsbury Management Fellow and successful serial entrepreneur, **Henning von Spreckelsen** is Chief Executive of Shere Investment and a Non-Executive Director at Square Rig.

Views expressed in this publication are those personally held by the speakers.

Sources of further information on Bitcoin:

- [History of Bitcoin](#)
- [CoinDesk](#)
- [UK Digital Currency Association](#)
- [Bitcoin Foundation](#)



Bitcoin Expert

Adam Cleary, Director of the UK Digital Currency Association (UKDCA) and Founder of Bullion Bitcoin. The UKDCA is a non-profit organisation established by a diverse range of individuals and businesses that are united by a vision that digital currencies ultimately represent an opportunity for profound improvement within society as a whole. Bullion Bitcoin operates bullionbitcoin.com, a web based gold to Bitcoin exchange for professional investors. Bullion Bitcoin enables direct exchange of physical gold bullion and Bitcoin between professional investors.



Bitcoin Business

Dr Tom Robinson, Chief Operating Officer of Elliptic. Elliptic bridges the gap between traditional finance and digital currencies, making it easier for enterprises and financial institutions to store and manage their digital assets. Elliptic Vault is the world's first insured Bitcoin storage service.



Bitcoin Enthusiast

Daniel Neal is a Programmer at EvoEnergy. One of Daniel's passions is learning about new technologies and he is fascinated that Bitcoin has been able to create a digital currency that is both secure and decentralised. His second passion is sustainability, hence his decision to work for EvoEnergy. He is interested in exploring the bias in the world towards unsustainable things such as fossil fuels, mass production, planned obsolescence, the relentless focus on GDP growth, which led him to the International Movement for Monetary Reform. Daniel believes that these issues are not isolated, but are symptoms of how money is created in the current system and if we can change how money is created, we can address issues in a powerful way.

THE BITCOIN DEBATE



The Sainsbury Management Fellows' Society – Engineers in Business Fellowship
33 Ormond Crescent, Hampton, Middlesex TW12 2TJ

Telephone: 020 8941 8584 | E-mail: cathy.breeze@smf.org.uk | Twitter: [@EngineersnBiz](https://twitter.com/EngineersnBiz)

www.smf.org.uk