Snake Oil & Cryptocurrency

Snake Oil Warning Signs...

- Amazingly long key lengths
  - The NSA is super paranoid, and even they don't use >256b keys for symmetric key or >4096b for RSA/DH public key
  - So if a system claims super long keys, be suspicious
- New algorithms and crazy protocols
  - There is ***no reason*** to use a novel block cipher, hash, public key algorithm, or protocol
    - Even a "post quantum" public key algorithm should not be used alone:
      Combine it with a conventional public key algorithm
  - Anyone who roles their own is asking for trouble!
  - EG, Telegram
    - "It's like someone who had never seen cake but heard it described tried to bake one.
      With thumbtacks and iron filings." Matthew D Green
    - "Exactly! GLaDOS-cake encryption.
      Odd ingredients; strange recipe; probably not tasty; may explode oven. :)" Alyssa Rowan

Snake Oil Warning Signs...

- "One Time Pads"
  - One time pads are secure, if you actually have a true one time pad
  - But almost all the snake oil advertising it as a "one time pad" isn't!
  - Instead, they are invariably some wacky stream cypher
- Gobbledygook, new math, and "chaos"
  - Kinda obvious, but such things are never a good sign
- Rigged "cracking contests"
  - Usually "decrypt this message" with no context and no structure
    - Almost invariably a single or a few unknown plaintexts with nothing else
  - Again, Telegram, I'm looking at you here!

A Snake Oil Vendor in Practice...

- Crown Sterling...
  - Gave a "sponsored" BlackHat Talk...
  - Where they claimed a "revolution" in factoring that could destroy "all" public key
    - Based on "Cornel published" research (just published on arXiv) which was utter nonsense
  - And new "5-D TimeAI based encryption"
    - And issued a cracking challenge
- Laughed out of BlackHat...
  - And then sued BlackHat for breach of contract after BlackHat pulled info about the talk from the site and didn't stop the heckling...
- Didn't really know if they were delusional or deliberate frauds at the time...
  - But they were roundly mocked by the security community

Snake Oil Vendor Proves It Is A Fraud

- "See, proof we can factor... On a laptop!"
  - A 256b RSA key... And we can do 512b in a few hours
    - Never mind that RSA works because factoring is near-exponential
    - And that 512b is already just $100->break key...
  - SSH'ed into a 32 core server...
    - Not the promised "laptop"
  - And seeming to use open source (**`cado-nfs`**) to do the actual work, not their "revolutionary" new algorithm...
- QED: Outright frauds...
  - A literal faked and deliberately deceptive demonstration

Nick Brings The FIRE!

Nicholas Weaver, lecturer at the University of California Berkeley's Department of Electrical Engineering and Computer Sciences, reacted to Grant's latest demonstration with this statement to Ars:

> It was previously an open question whether Mr Grant was a fraud or just delusional. His new press release now makes me certain he is a deliberate fraud.
>
> He received a lot of feedback from cryptographers, both polite and rude, so showing this level of continued ignorance is willful at this point. His video starts with the ridiculously false notion that factoring is all there is for public key. He then insists that breaking a 256 bit RSA key or even a 512b key is somehow revolutionary. It's not. Professor [Nadia] Heninger at UCSD, as part of her work on the FREAK attack, showed that factoring a 512 bit key is easily accomplished with less than $100 of computing time in 2015.
>
> His further suggesting that breaking 512-bit breaks RSA is also ridiculous on its face. Modern RSA is usually 2048 bits or higher, and there is a near-exponential increase in the difficulty of factoring with the number of bits.
>
> At this point I have to conclude he is an outright fraud, and the most likely explanation is he's looking to raise investment from ignorant accredited investors. And now I wonder how many other companies he's started are effectively fraudulent.

Nicholas Weaver ✓
@ncweaver

Replying to @crownsterling_

FYI My offer stands you litigious fraudulent fuckwits. If you consider my statements that you are fraudulent fuckwits based on this release & demonstration libel, I'll gladly tell you a good address for service, just DM for info.

2:10 PM · Sep 21, 2019 · Twitter Web App

Unusability:
No Public Keys

- The APCO Project 25 radio protocol
  - Supports encryption on each traffic group
    - But each traffic group uses a single ***shared*** key
- All fine and good if you set everything up at once...
  - You just load the same key into all the radios
  - But this totally fails in practice: what happens when you need to coordinate with somebody else who doesn't have the same keys?
- Made worse by bad user interface and users who think rekeying frequently is a good idea
  - If your crypto is good, you shouldn't need to change your crypto keys
- "Why (Special Agent) Johnny (Still) Can't Encrypt"

Unusability: PGP

- I ***hate*** Pretty Good Privacy
  - But not because of the cryptography...
- The PGP cryptography is decent...
  - Except it lacks "Forward Secrecy":
    If I can get someone's private key I can decrypt all their old messages
- The metadata is awful...
  - By default, PGP says who every message is from and to
    - It makes it much faster to decrypt
  - It is hard to hide metadata well, but its easy to do things better than what PGP does
- It is never transparent
  - Even with a "good" client like GPG-tools on the Mac
  - And I don't have a client on my cellphone

Unusability:
How do you find someone's PGP key?

- Go to their personal website?
- Check their personal email?
- Ask them to mail it to you
  - In an unencrypted channel?
- Check on the MIT keyserver?
  - And get the old key that was mistakenly uploaded and can never be removed?

Search results for 'nweaver icsi edu berkeley'

```
Type bits/keyID     Date       User ID
pub  4096R/8A46A420 2013-06-20 Nicholas Weaver <nweaver@icsi.berkeley.edu>
                               Nicholas Weaver <n_weaver@mac.com>
                               Nicholas Weaver <nweaver@gmail.com>
pub  2048R/442CF948 2013-06-20 Nicholas Weaver <nweaver@icsi.berkeley.edu>
```

Unusability:
openssl libcrypto and libssl

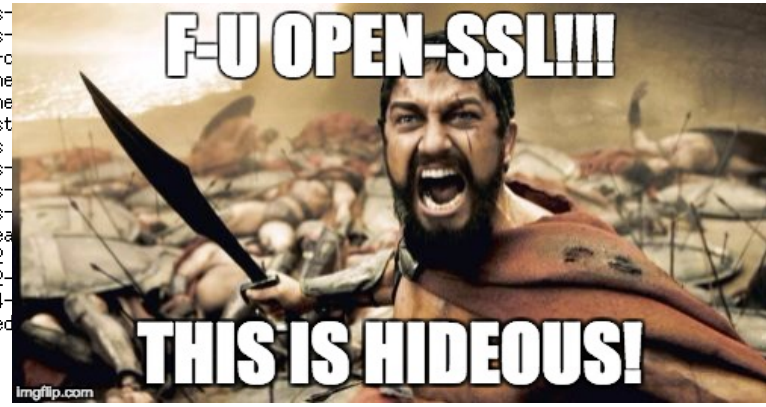
- OpenSSL is a nightmare...
  - A gazillion different little functions needed to do anything
- So much of a nightmare that I'm not going to bother learning it to teach you how bad it is
  - This is why last semester's python-based project didn't give this raw
- But just to give you an idea:
  The command line OpenSSL utility options:

```
OpenSSL> help
openssl:Error: 'help' is an invalid command.

Standard commands
asn1parse         ca                ciphers           cms
crl               crl2pkcs7         dgst              dh
dhparam           dsa               dsaparam          ec
ecparam           enc               engine            errstr
gendh             gendsa            genpkey           genrsa
nseq              ocsp              passwd            pkcs12
pkcs7             pkcs8             pkey              pkeyparam
pkeyutl           prime             rand              req
rsa               rsautl            s_client          s_server
s_time            sess_id           smime             speed
spkac             srp               ts                verify
version           x509

Message Digest commands (see the `dgst' command for more details)
md4               md5               mdc2              rmd160
sha               sha1

Cipher commands (see the `enc' command for more details)
aes-
aes-
bf-c
came
came
cast
des
des-
des-
des-
idea
rc2
rc2-
rc4-
seed
```

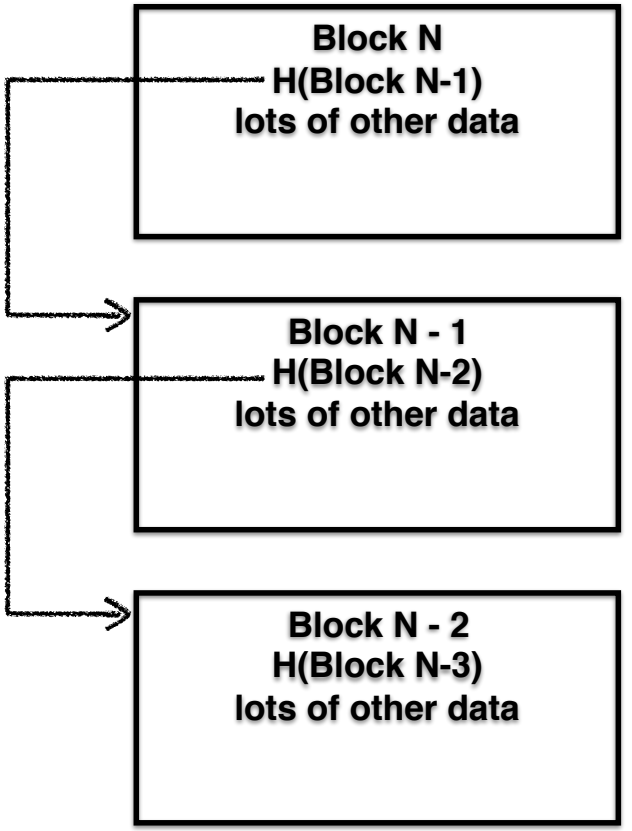


And On To ~~Linked Lists~~ Blockchains And CryptoCurrencies

- "Blockchain Technology"
  - A fancy word for "Append-Only Data Structure"
    - That causes people's eyes to glaze over and them to throw money at people
  - "Private/Permissioned Blockchain":
    - A setup where only one or a limited number of systems are authorized to append to the log
    - AKA 20 year old, well known techniques
  - "Public/Permissionless Blockchain":
    - Anybody can participate as appenders so there is supposedly no central authority: Difficulty comes in removing "sibyls"
- Cryptocurrencies
  - Things that don't actually work as currencies…

Hash Chains

- If a data structure includes a hash of the previous block of data: This forms a “hash chain”
- So rather than the hash of a block validating just the block:
  The inclusion of the previous block’s hash validates all the previous blocks
- This also makes it easy to add blocks to data structures
  - Only need to hash block + hash of previous block, rather than rehash everything:
    How you can efficiently hash an "append only" datastructure
- Now just validate the head (e.g. with signatures) and voila!
  - All a “blockchain” is is a renamed hashchain!
    Linked timestamping services used this structure and were proposed back in 1990!



Merkle Trees

- Lets say you have a lot of elements
  - And you want to add or modify elements
- And you want to make the hash of the set easy to update
- Enter hash trees/merkle trees
  - Elements 0, 1, 2, 3, 4, 5...
  - H(0), H(1), H(2)...
  - H(H(0) + H(1)), H(H(2)+H(3))...
  - The final hash is the root of the top of the tree.
- And so on until you get to the root
  - Allows you to add an element and update lg(n) hashes Rather than having to rehash all the data
  - Patented in 1979!!

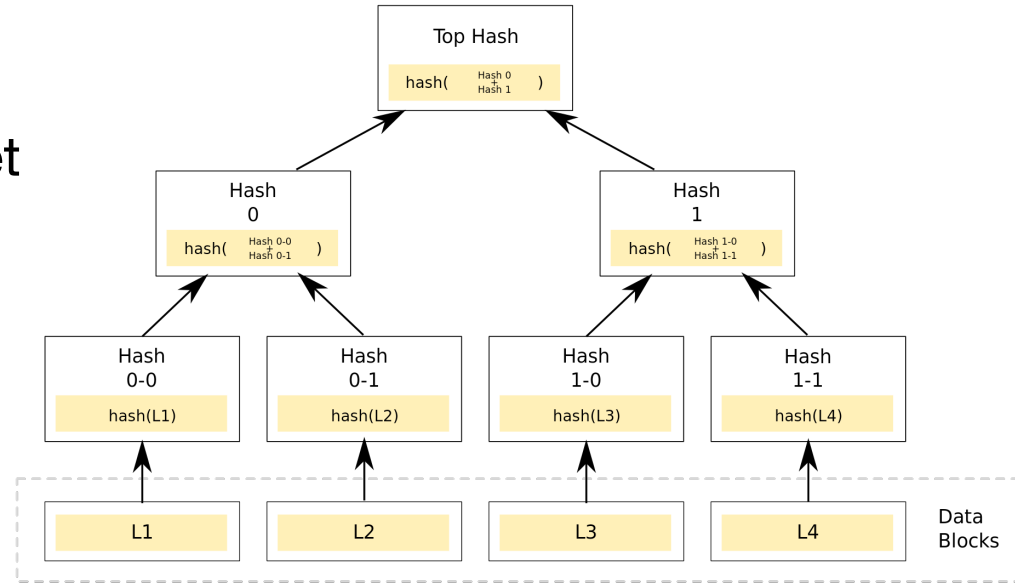


Image Stolen from Wikipedia

A Trivial Private Blockchain…

- We have a single server ***s***, with keys K_{pub} and K_{priv}…
  - And a git archive ***g***…
- Whenever we issue a pull request…
  - The server validates that the pull request meets the allowed criteria
  - Accepts the pull request
  - Signs the head…
- And that is it!
  - Git is an append only data structure, and by signing the new head, we have the server authenticating the ***entire archive!***
- This is why "private" blockchain is ***not*** a revolution!!!
  - Anything that would benefit from an append-only, limited writer database already has one!

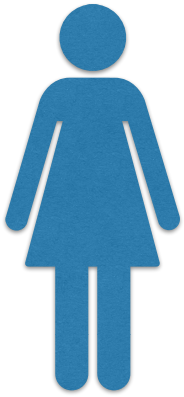
Why Talk About Cryptocurrencies?!?

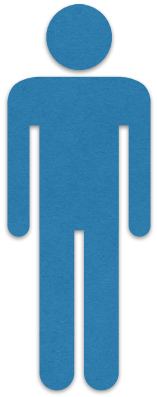
- I am an actual ***expert*** in this area
  - It has been one of my research focuses for the past 5+ years!
- But I want it to die in a fire!
  - There is effectively no value:
    - Private Blockchains are 20+ year old ideas
    - Public Blockchains are grossly inefficient in the name of "decentralization" without actually being decentralized!
      - And don't actually solve any problems other than those required to implement cryptocurrencies!
    - Cryptocurrencies don't work as currency unless you are a criminal!
- Yet it has refused to just go away

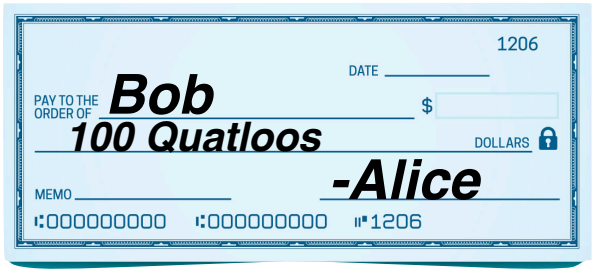
What Is A "Cryptocurrency"?

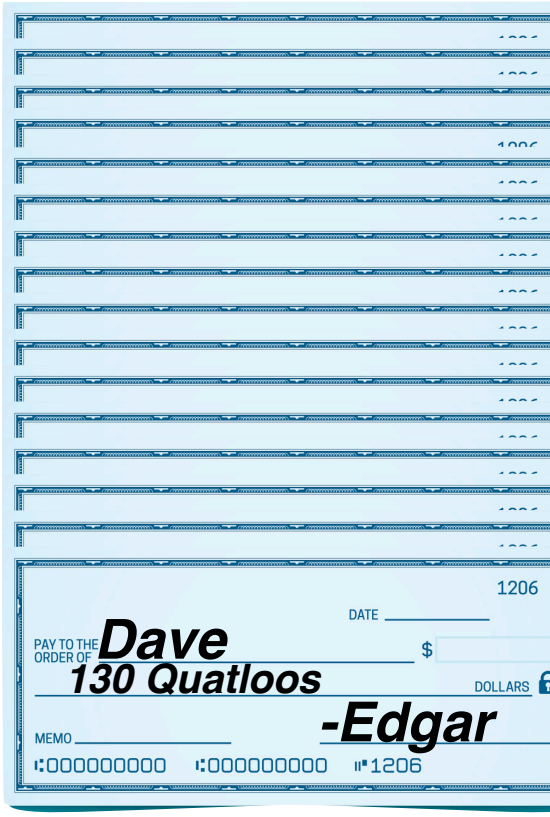
- A cryptocurrency is a tradable cryptographic token
  - The goal is to create irreversible electronic cash with no centralized trust: If Alice wants to pay Bob 200 Quatloos to pay off her losing bet on the Green thrall, there should be ***nobody else who can block or reverse this transfer***
- Based on the notion of a public ledger (the "Blockchain")
  - A public shared document that says "Alice has 3021.1141 Quatloos, Bob has 21.13710 Quatloos, Carol has 1028.8120 Quatloos..."
  - People can ***only*** add items to the ledger ("append-only"), never remove items
- Big Idea: Alice writes and signs a check to Bob saying "I, Alice, Pay Bob 200 Quatloos"
  - This check then gets added to the public ledger so now everyone knows Alice now has 2821.1141 Quatloos and Bob has 221.13710 Quatloos

What Is A "Cryptocurrency"?





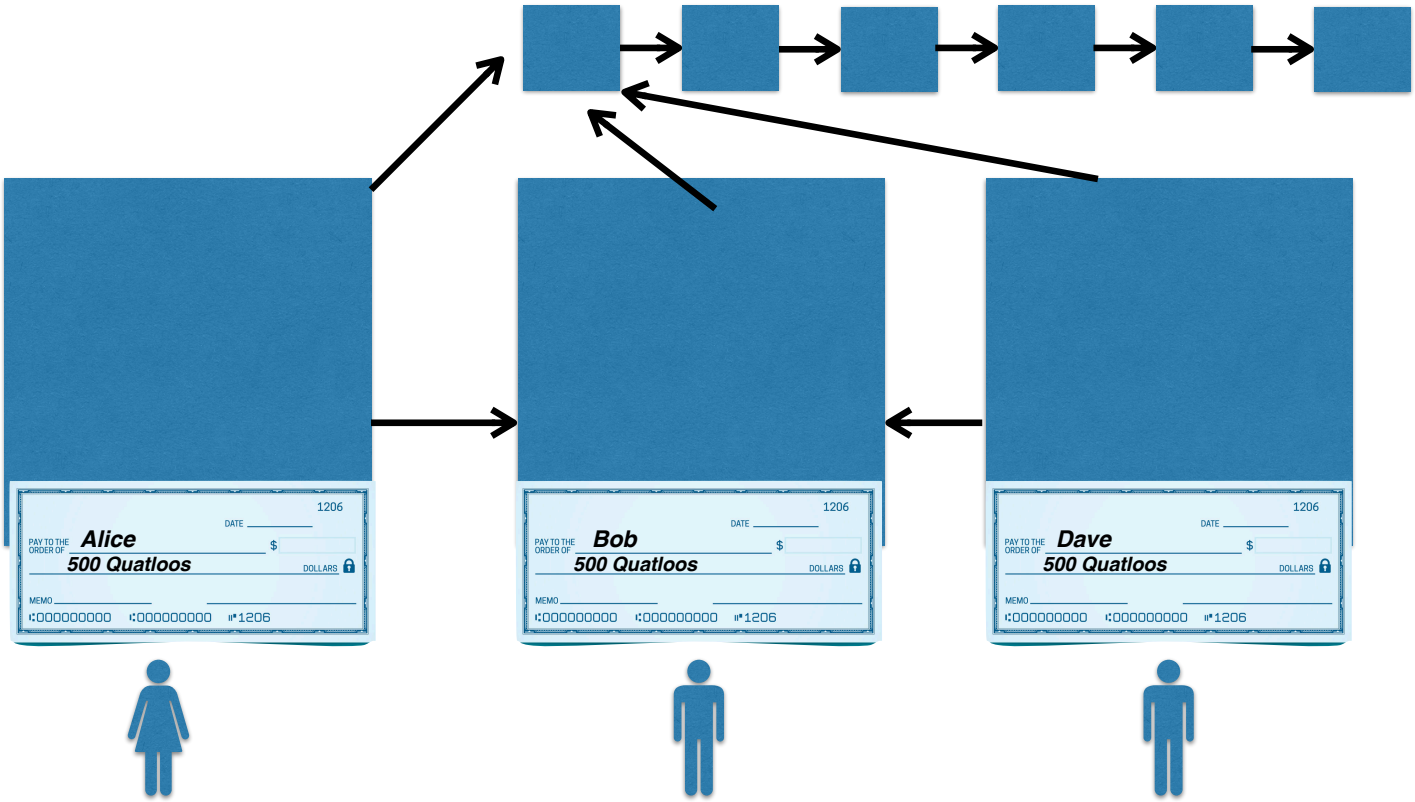




What Is A "Blockchain" (well, "Public" or "Permissionless" Blockchains)

- Everyone involved gathers up copies of the loose checks
  - For each check, validate that there are sufficient funds
  - Bundle all the checks up into a "block" and staple them together, with a pointer to the previous pile
- Everybody now does a lot of useless "work" that may eventually get lucky
  - The one that gets lucky staples this (which is in the form of a check saying "The system pays to ME the reward for success" and the staple that binds everything together) to the block as well, publishes this, and gets the reward
- Now everybody else knows this stapled pile of checks is now verified
  - So everybody starts on a new block, pointing to the previous block and gathers up the new checks that haven't yet been processed
- Result is an ***append only*** data structure

What Is A "Blockchain"
(well, "Public" or "Permissionless" Blockchains)



What Is Bitcoin?

- Simply the first widespread development of this idea
  - A "Bitcoin wallet" is simply a collection of cryptographic keys
    - Private key K_{priv}: A secret value stored in the wallet
    - Public key K_{pub}: A public value that anybody is allowed to see, derived from the private key
  - The "Bitcoin Blockchain" is Bitcoin's particular implementation of the shared ledger
- Spending Bitcoin is simply writing a check and broadcasting it:
  - "Pay K_{pub}=1Ross5Np5doy4ajF9iGXzgKaC2Q3Pwwxv the value 0.05212115 Bitcoin...
    And whoever validates this transaction gets 0.0005 Bitcoin"
    - Signed 1FuckBTCqwBQexxs9jiuWTiZeoKfSo9Vyi:
    - This is Bitcoin transaction
      `d6b24ab29fa8e8f2c43bb07a3437538507776a671d9301368b1a7a32107b7139`

What Is Bitcoin?

d6b24ab29fa8e8f2c43bb07a3437538507776a671d9301368b1a7a32107b7139

1FuckBTCqwBQexxs9jiuWTiZeoKfSo9Vyi (0.05 BTC - Output)
1FuckBTCqwBQexxs9jiuWTiZeoKfSo9Vyi (0.000016 BTC - Output)
1FuckBTCqwBQexxs9jiuWTiZeoKfSo9Vyi (0.00235018 BTC - Output)
1FuckBTCqwBQexxs9jiuWTiZeoKfSo9Vyi (0.00025497 BTC - Output)

1Ross5Np5doy4… (Free Ross Ulbricht) - (Spent) 0.05212115 BTC

0.05212115 BTC

Summary	
Size	763 (bytes)
Weight	3052
Received Time	2015-02-04 21:15:16
Included In Blocks	341974 (2015-02-04 21:16:58 + 2 minutes)
Confirmations	180240 Confirmations
Visualize	View Tree Chart

Inputs and Outputs	
Total Input	0.05262115 BTC
Total Output	0.05212115 BTC
Fees	0.0005 BTC
Fee per byte	65.531 sat/B
Fee per weight unit	16.383 sat/WU
Estimated BTC Transacted	0.05212115 BTC
Scripts	Hide scripts & coinbase

d6b24ab29fa8e8f2c43bb07a3437538507776a671d9301368b1a7a32107b7139

What Is Bitcoin Mining?

- It is the particular instance used to protect the transaction history for Bitcoin
  - Based on SHA-256
- Every miner takes all the unconfirmed transactions and puts them into a block
  - The block has fixed capacity (currently 1MB), limiting the global rate to ~3 transactions per second
  - Also attaches the "pay me the block reward and all fees" check to the front (the "coinbase")
  - Also attaches the hash of the previous block (including by reference everything in the past)
- Then performs the "Proof of work" calculation
  - Just hashes the block, changing it trivially until the hash starts with enough 0s.
    - This is the "difficulty factor", which automatically adjusts to ensure that, worldwide, a new block is discovered roughly every 10 minutes
- On success it broadcasts the new block

The Blockchain Size Problem

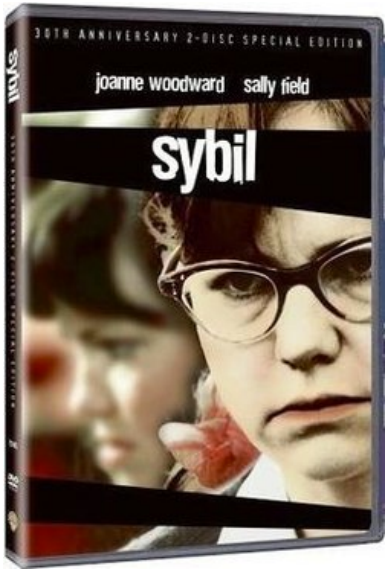
- In order to verify that Alice has a balance...
  - You have to potentially check ***every transaction*** back to the beginning of the chain
- Results in amazingly inefficient storage
  - Every full Bitcoin node needs access to the ***entire*** transaction history
    - Because the entire history is needed to validate the transaction
  - A "lightweight" node still needs to keep the headers for all history
    - And still has to ask for suitable information to verify each transaction it needs to verify
- So if we have 10,000 nodes, this means 10,000 copies of the Bitcoin Blockchain!

The Blockchain Power Problem

- The Bitcoin system consumes, ***at minimum***, 8 GW of power right now (or basically Austria!)
- This is because Proof of Work creates a Red Queen's Race
  - As long as there is potential profit to be had you get an increase in capability
  - Efficiency gains get translated into more effort, not less power consumption
- There is ***no way*** to reduce Bitcoin's power consumption without reducing Bitcoin's price or the block reward
  - It is this waste of energy that protects Bitcoin!

The Sybil Problem...

- There is a lot of talk about "consensus" algorithms in cryptocurrencies
  - How the system agrees on a common view of history
  - Bitcoin's is simple: "Longest Chain Wins"
- But Proof of Work is ***not*** about consensus:
  - It is about solving the sybil (fake node) problem...
    How do you prevent someone from just spinning up a gazillion "nodes"
    - Have each node have to contribute some resource!
  - "Proof of stake" is just another solution...
    Which requires your money to be easy to steal!
- But there is an easier one: "Articulated Trust!"
  - Like the CAs: Use human-based agreements to agree on ***M*** trusted parties
    - Only ½***M***+1 need to actually be trustworthy!



The Irreversibility Problem

- A challenge: Buy $1500 worth of Bitcoin ***now***, without:
  - Needing $1500 cash in hand, transferring money to an individual, or having a preexisting relationship with an exchange
- You ***can't***!:
  Everything electronic in modern banking is by design reversible except for cryptocurrencies
  - This is designed for fraud mitigation: Ooops, something bad, undo undo...
- So the seller of a Bitcoin either must...
  - Take another irreversible payment ("Cash Only")
  - Have an established relationship so they can safely extend the buyer credit
  - Take a deposit from the buyer and wait a couple days

The Theft Problem...

- Irreversibility also makes things ***very*** easy to steal
  - Compromise the private key & that is all it takes!
- Result: ***You can't store cryptocurrency on an Internet Connected Computer!***
  - The best host-based IDS is an unsecured Bitcoin wallet
  - So instead you have hardware devices, paper wallets, and other schemes intended to safeguard cryptocurrency
    - It is worse than money under the mattress:
      Stealing money under the mattress requires ***physical access!***

The Decentralization Dream...

- "Trust Nobody"
  - The entire ***system*** is trustworthy but each actor is not
- Requires that there never be a small group that can change things...
- It is basically an article of faith that this is a good & necessary idea
  - But about the only thing it really buys is censorship-resistance

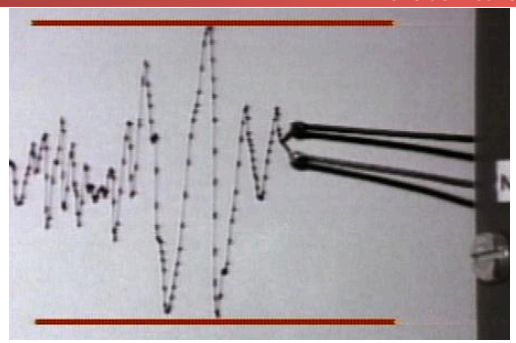
The Decentralization Reality

- Code is inevitably developed by only one or a few groups
  - And they can ***and do*** change it capriciously if it affects their money:
    When the Ethereum "DAO" theft occurred, the developers changed things to take ***their*** money back from the thief
    - Current debate to unlock another smart contract...
- Rewarded mining centralizes
  - Especially with ASICs and "Stealth ASICs" for proof of work mining
  - And the miners can ***and do cheat***, such as enable "double spending" attacks against gambling sites
- Several just aren't decentralized at all
  - Trusted coordinator or seed nodes
- https://arewedecentralizedyet.com

The True Value of Cryptocurrencies: Censorship Resistance...

- There is (purportedly) no central authority to say "thou shalt not" or "thou shouldn't have"
  - Well, they exist but they don't care about your drug deals...
- If you believe there should be no central authorities...
  - Cryptocurrencies are the only solution for electronic payments
- But know this enables
  - Drug dealing, money laundering, crim2crim payments, gambling, attempts to hire hitmen etc...
  - Ease of theft of the cryptocurrencies themselves
  - Ransomware and extortion
- And some minor "good" uses
  - Payments to Wikileaks and Backpage when they were under financial restrictions

Cryptocurrencies don't work unless you ***need*** censorship resistance



- ***Any*** volatile cryptocurrency transaction for real-world payments requires two currency conversion steps
  - It is the only way to remove the volatility risk
    - Which is why companies selling stuff aren't actually using Bitcoin, but a service that turns BTC into Actual Money™
    - And thanks to the irreversibility problem, buying is expensive
  - But if you believe in the cryptocurrency, you ***must hodl!***

- Result is that the promised financial applications (cheap remittances etc) can ***never apply*** in volatile currencies like Bitcoin
  - Really Bitcoin et al are ***only*** appropriate for buying drugs, paying ransoms, hiring fake hitmen, money laundering...
  - Otherwise, use PayPal, Venmo, Zelle, MPasa, Square, etc etc etc...

Worse:
Censorship Resistance Enables Crime

- Before the cybercrooks had Liberty Reserve and still have Webmoney...
  - But Liberty Reserve got shut down by the feds (a shutdown that ***really*** screwed up the black market hackers), and WebMoney is Russia-only
- So the only censorship alternative is cash
  - Which requires mass ($1M ≅ 10 kg) and physical proximity
- So the cryptocurrencies are the only game in town!
  - The drug dealers hated Bitcoin in 2013, and hate them all still, but it is the only thing that works
  - Ransomware used to be Green Dot & Bitcoin, but Green Dot was forced to clean up its act

And "Stablecoins" are no better...

- Removing the two currency conversion steps requires ***eliminating*** volatility
- Building a stable cryptocurrency requires an entity to convert dollars to tokens and vice versa ***at par***.
  AKA a "Bank" and "Banknotes"
  - Thus a centralized entity, so why bother with a "decentralized" blockchain? 🤔
  - All other "algorithmic stablecoins" are snake oil that implode spectacularly
- There is now a choice for the bank
  - Either you become as regulated as PayPal & Visa
  - Or you have a "wildcat bank"
  - Or you have "Liberty Reserve" and the principals end up in jail

Liberty Reserve

Department of Justice
Office of Public Affairs

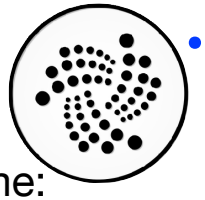
FOR IMMEDIATE RELEASE Friday, May 6, 2016

Liberty Reserve Founder Sentenced to 20 Years For Laundering Hundreds of Millions of Dollars

Arthur Budovsky, 42, was sentenced today in the Southern District of New York to 20 years imprisonment for running a massive money laundering enterprise through his company Liberty Reserve S.A. ("Liberty Reserve"), a virtual currency once used by cybercriminals around the world to launder the proceeds of their illegal activity.

Practically Every Cryptocurrency is "Me Too" with some riff...

- There are lots of cryptocurrencies...
  - But in many ways they act the same: A public ledger structure and (perhaps) a purported decentralized nature
- Litecoin:
  - Bitcoin with a catchy slogan
- Dogecoin:
  - Bitcoin with a cool joke
- Ripple:
  - (Centralized) Bitcoin with an ***unrelated*** settlement structure



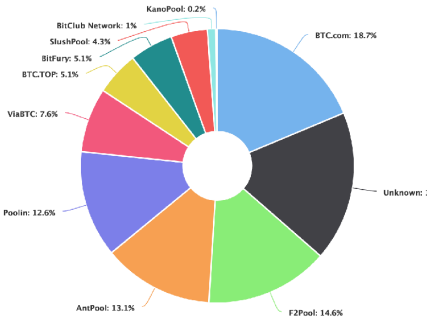
- IOTA:
  - (Centralized) Bitcoin but with trinary math 🤷 and roll-thy-own cryptography 🤦?!?!
- Monero:
  - Bitcoin with some better pseudonymity
- Zcash:
  - Bitcoin with ***real*** anonymity
- Ethereum:
  - Bitcoin with "~~smart contracts~~", unlicensed securities and million dollar bug bounties

The Snakiest Snake-Oil In the Cryptocurrency Space…

- IOTA (aka IdiOTA), a "internet of Things" cryptocurrency…
  - That doesn't use public key signatures, instead a hash based scheme that means you can ***never*** reuse a key…
    - And results in 10kB+ signatures! (Compared with RSA which is <450B, and those are big)
  - That has created their own hash function…
    - That was quickly broken!
  - That is supposed to end up distributed…
    - But relies entirely on their central authority
  - That uses ***trinary math!?!***
    - Somehow claiming it is going to be better, but you need entirely new processors…

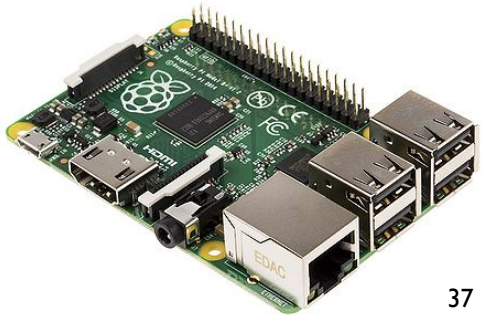
Public Blockchain's Weak Security Guarantees

- "Public blockchains" protected by proof-of-whatever promise a "no central authorities" & "fully distributed trust" append-only data structure.
  - But this isn't the case!
- Any lottery-based reward creates mining pools
  - Which means a few entities ***can and do*** control things:
    3 entities effectively control Bitcoin with >50% of the hashrate
- The code developers also ***can and do*** act as central authorities
  - When ~10% of Ethereum was stolen from the "DAO", the developers rolled out a fork to undo the theft
- ***NO significant cryptocurrency/public blockchain is decentralized***!
  https://arewedecentralizedyet.com/



And The Security Must Be Either Weak or Inefficient

- Proof of work is provably wasteful
  - It ***may*** be possible to make "proof of stake" work, but that has different problems
- And there is no way to make proof of work cheap!
  - Proof of "whatever" protects up to the amount that "whatever" costs, ***but not more!***
- So "articulated trust" is vastly cheaper
  - Take 10 trustworthy entities, each one has a Raspberry Pi that validates and signs transaction independently
    - In the end, 6 need to prove to be honest, but could easily process every Bitcoin transaction
  - This requires 100W of power and $500 worth of computers!, or 8-9 ***orders of magnitude less power***



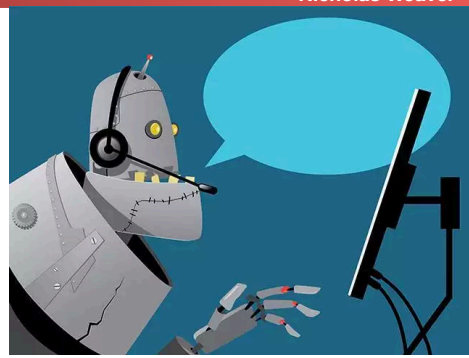
What About Non-Currency Blockchain Applications?

- Put A ~~Bird~~ Blockchain On It!
- "Private" or "Permissioned" Blockchain
  - Simply a cryptographically signed hashchain:
    Techniques known for ***20+ years***!
  - The only value gained is you say "Blockchain" and idiots respond with "Take My Money!"
- "Public" Blockchains are grossly inefficient and can't actually deliver on what they promise
- And those proposing "blockchain" don't actually understand the problem space!
  - Solve (Voting, electronic medical records, food security, name your hard problem) by putting {what data exactly? How? What formats? What honesty? What enforcement?} in an append-only data structure

But There Is One Innovative New Stupidity: "Smart Contracts"

- Idea! "Contracts are expensive!" 🤔
  - So lets take standard things written in a formal language ("Legaleze")
  - And replace them with things written in a horrid language (that looks vaguely like JavaScript)
    - By default these "smart contracts" are fixed once released!
    - And this makes things cheaper ***how***?
- And ditch the exception handling mechanism
  - If you can steal from a Smart Contract, are you actually violating the contract?

"Smart Contract" Reality: Public Finance-Bots



- They are really Public Finance-Bots
  - Small programs that perform money transfers
    - Finance bots are ***not new***:
      The novelty is these finance bots are public and publicly accessible
    - Oh, and these aren't "distributed apps"
- Predictable Result: Million Dollar Bugs
  - The "DAO", a "voted distributed mutual fund as smart contract":
    Got ~10% of Ethereum before someone stole all the money!
  - The "Parity Multi-Signature Wallet" (an arrangement to add multiple-signature control to reduce theft probability)
  - The "Proof of Weak Hands 1.0" explicit Ponzi Scheme

The Rest Is Speedrunning
500 years of bad economics...

- Almost every cryptocurrency exchange is full of frauds banned in the 1930s
- Ponzi schemes without postal reply coupons, including explicit ponzies as "Smart Contracts"
- Tether, a "stablecoin" is almost certainly a wildcat bank from the 1800s
- Every tradable ICO is really an unregulated security just like the plagues in the South Sea Bubble of 1720 usually as a "Smart Contract"
- Replicated rare tulips with rare cats on the Ethereum Blockchain as a "Smart Contract"! Time to party like it is 1637!
- And don't forget the goldbug-ism...