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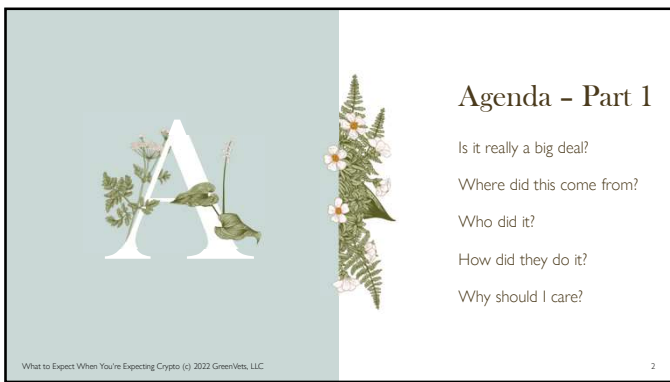
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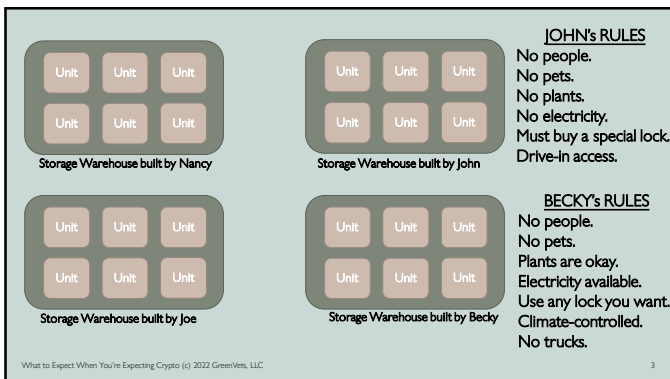
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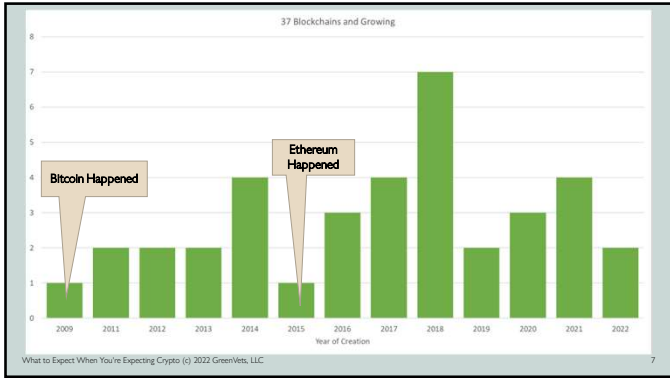
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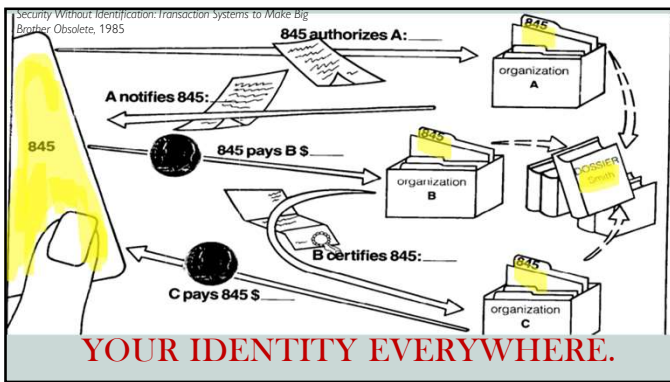
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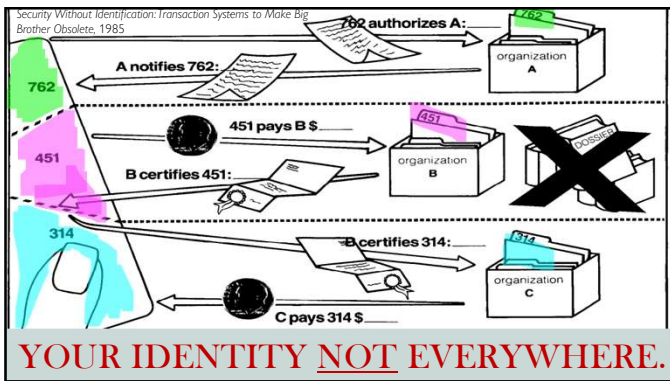
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## ENCRYPTION DEWEAPONIZED

But, not without a fight.

1991 – Phil Zimmerman and Hal Finney create PGP, encryption that uses private keys to protect information.

**The NSA wants access.** PGP says no; their leaders come under federal investigation.

1993 – Clinton drops the federal investigation into PGP following the release of PGP’s code to the world (books on planes)

1996 – Encryption, some of it, is moved off the munitions list.

**Cryptography = art/science of encryption, of concealing messages**

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## CYPHERPUNKS MANIFESTO

“We are defending our privacy with

- cryptography,
- with **anonymous mail forwarding** systems,
- with **digital signatures**, and with
- **electronic money**...

We cannot expect governments, corporations, or other large, faceless organizations to grant us privacy out of their beneficence...

We must defend our privacy.” - Eric Hughes



EFF logo plain, 6 August 2013, Author: EFF, <https://commons.wikimedia.org/wiki/File:EFF-logo-plain.svg>  
CryptoPartyHandbook cover, <https://www.cryptoparty.nl/learn/handbook>

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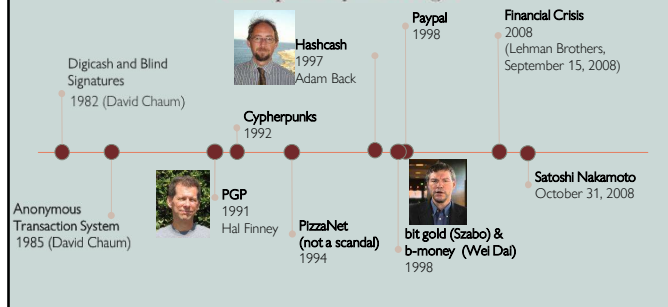
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## LIBERTY THROUGH ENCRYPTION

Transparency = Strength



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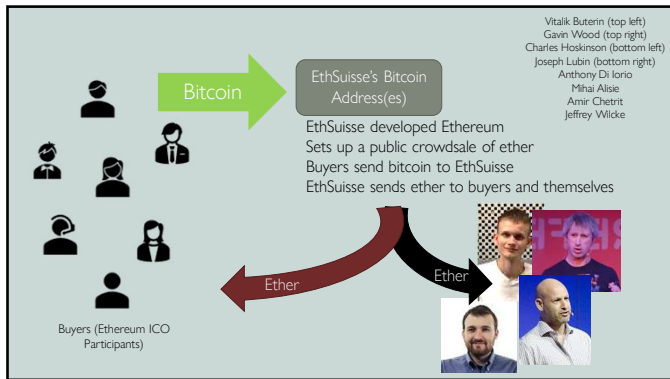
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### The Merge: What does PoS mean for Ethereum?

*Who has extra ether to park at an address?  
(32 eth at a time)*

\* - over simplified

**What does it mean?**

- PoS = Proof of Stake
- Changes from competition to votes\*

**How does it work?**

- Stake your ether.
- Never move it.
- Earn interest.

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*"Some [of these tokens] like bitcoin, and that's the only one I'm gonna say...my predecessors and others have said, they're a commodity... the investing public is hoping for a return... many of these crypto financial assets have the key attributes of a security."*

**GARY GENSLER, SEC CHAIRMAN**

<https://www.msn.com/en-us/money/markets/gensler-labels-bitcoin-a-e2-80-98commodity-e2-80-99-as-crypto-prices-stabilize/ar-AAAYVhdj?fromMaestro=true>

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### Similarities (b/t Bitcoin & Ethereum)

<b>PUBLIC:</b>	<ul style="list-style-type: none"> <li>• Anyone can view transactions.</li> <li>• <b>BUT</b> you have to know what you're looking at</li> </ul>
<b>DISTRIBUTED:</b>	<ul style="list-style-type: none"> <li>• Anyone can run a node.</li> <li>• <b>BUT</b> but bitcoin will melt your graphics processor and you need a 14 TB SSD to get started on Ethereum</li> </ul>
<b>DECENTRALIZED:</b>	<ul style="list-style-type: none"> <li>• The nodes decide which update becomes the main update that all nodes run.</li> <li>• <b>BUT</b> Ethereum has the power to dictate their blockchain for some updates (so it's not completely decentralized).</li> </ul>

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Differences	
Bitcoin	Ethereum
<ul style="list-style-type: none"> <li>• Bitcoin must be mined</li> <li>• Bitcoin became well-known b/c of its use on the darknet</li> <li>• Additional wallet addresses <b>can be discerned</b> through transaction analysis</li> <li>• Bitcoin addresses store a number of bitcoins and a tiny amount of data – <b>no code</b></li> </ul>	<ul style="list-style-type: none"> <li>• Was pre-mined, then mined, now staked</li> <li>• Ethereum became well-known through marketing</li> <li>• Additional addresses are <b>less discernible</b> through transaction analysis</li> <li>• Ethereum addresses can store <b>executable code</b>.             <ul style="list-style-type: none"> <li>• Create new tokens on ethereum based on whatever rules they make up</li> </ul> </li> </ul>

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## Agenda - Part 2

- Crypto in Divorce
- Crypto in Business
- Crypto in Crime
- Parables of Evidence
- Summary

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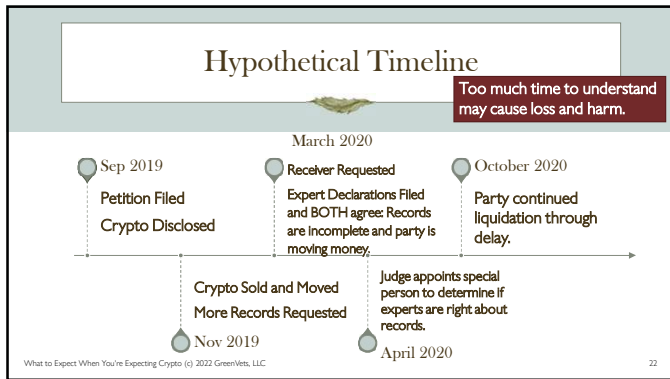
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Professor, Cyber Engineering at HBU

ACFE Speaker of the Year & NACVA 40 Under 40 Honoree, 2019

Litigation Forensics Board Chair, NACVA

Science and Engineering Advisory Board, HBU

**Testifying expert on cryptocurrency tracing**

- Matrimonial Litigation
- Civil Disputes & Criminal Defense
- Training for Law Enforcement

**Consulting and testimony in civil and criminal litigation**

- Oil & Gas Operator Disputes
- IP and Trade Secret Theft
- Crypto Defense

**Digital forensics, risk, & physical asset security**

- Data Privacy Compliance & Breach Issues
- Risk Assessments, M&A Due Diligence, BEC
- Pen Testing, Ethical Hacking, & Cybersecurity

**Dorothy Haraminac, MBA, CFE, MAFF, PI**  
 Phone: (346) 400-6554  
 Email: dorothy.haraminac@greenvetsLLC.com

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### Crypto in Divorce

Over-Reliance on Contention

Irrelevant Arguments

Wild Accusations

Insufficient Tax Records

Incomplete Bank Records

Missing Crypto Records

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**Why Do I Need Complete Records?**

Transactions are indisputable facts.

- They show what someone did.

Tax records are indisputable stories.

- They show what someone said they did at the time (to the IRS).

Records establish fact patterns.

- They show how someone did a thing.

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**Which Records?**  
(Part 1 of 3)

**Tax Records**

- Form 8938 (Foreign Assets)
- Form 8949 (Capital Gains/Losses)
- Form 8283 (Sch. A Contributions)
- Form 1099 Misc

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**Which Records?**  
(Part 2 of 3)

**Old Fashioned Financial Records**

- Bank statements
- Investment statements
- Credit card statements
- Employment agreements (incl. options, 83b?)
- Private Company Accts.

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Which Records?

(Part 3 of 3)

### Crypto Transaction Records

- From the **wallet**
- From the **exchange**
- From the **web 3 (defi) service**
  - Must include all addresses generated and transaction IDs
  - Must include USD deposits and withdrawals
  - Must not be self-created or public site screenshots
- **Public blockchain records are not sufficient as a discovery response**

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## Authoritative Source: the Internet



*Blockchain:* noun, almost all transactions related to crypto addresses

- **All addresses** used in wallets (software, hardware, website, etc.)
- All transaction history from an exchange **including recipient addresses** for crypto withdrawal transactions
- A list of **all addresses** generated for use in transactions

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Is there a crypto account? Yes.

CHECKCARD 03/01 COINBASE CHEAPSIDE	⊖	[P]	-350.00	<b>2,208.04</b>
CHECKCARD 03/01 COINBASE CHEAPSIDE	⊖	[P]	-1.99	<b>2,558.04</b>
CHECKCARD 03/01 COINBASE CHEAPSIDE	⊖	[P]	-1.94	<b>2,560.03</b>
CHECKCARD 03/01 COINBASE CHEAPSIDE	⊖	[P]	-1.00	<b>2,561.97</b>
CHECKCARD 03/01 HUGS & DONUTS HOUSTON TX	⊖	[P]	-18.01	<b>2,562.97</b>
CHECKCARD REVERSAL 03/01 COINBASE CHEAPSIDE	⊕	[P]	1.00	<b>2,580.98</b>

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### Do we need to trace these? Yes.

You can use this transaction report to inform your likely tax obligations. For US customers, Sell, Converts, and Rewards Income, and Coinbase Earn transactions are taxable events. For final tax obligations, please consult your tax advisor.

Timestamp	Transaction Type	Asset	Quantity	Price at Transaction	USD Subtotal	USD Total (including fees)	Notes
2019-05-31T05:08:25Z	Buy	ETH	0.193	248.5	48.01	50	1.99 Bought 0.193 ETH for 50.00 USD
2019-05-31T05:09:03Z	Send	ETH	0.193	247.3			Sent 0.193 ETH to 0x9a0A34df1692f73e4aa8347c734d092e88652df7
2019-05-31T05:28:07Z	Convert	BCH	0.296	419.2	122.8	123.9	1.11 Converted 0.296 BCH to 123.9 USD
2019-05-31T05:34:15Z	Sell	LTC	4.571	105.3	481.2	474	7.4 Sold 4.57099858 LTC for 5474.02 USD
2019-05-31T11:47:12Z	Receive	ETH	1.519	254.5			Received 1.51883576 ETH from an external account
2019-05-31T11:54:22Z	Convert	ETH	1.519	254.5	383.2	386.5	3.29 Converted 1.51883576 ETH to 20.42256999 REP
2019-05-31T11:55:13Z	Send	REP	20.42	18.76			Sent 20.42256999 REP to 0x9a0A34df1692f73e4aa8347c734d092e88652df7

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Address: 0x9a0A34df1692f73e4aa8347c734d092e88652df7

Sponsored: Nexo - Earn 8% Interest on Ethereum, paid out daily. Start Earning

Are there more records than this? Yes

Overview

Balance: 0 Ether

Ether Value: \$0.00

Token: \$0.00

Buy BTC with up to 50% off

Transactions Internal Txns Erc20 Token Txns Analytics Comments

Txn Hash	Method	Block	Date Time (UTC)	From	To
0xd01b852451907e02bd...	Transfer	10156257	2020-05-28 20:03:23	0x9a0A34df1692f73e4aa...	0xd01b852451907e02bd...
0x0f9d602ca834200b...	Transfer	10156254	2020-05-28 20:02:27	0x9a0A34df1692f73e4aa...	0x0f9d602ca834200b...

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### Are there web3 records? Yes.

Note: ONLY accessible to the account holder, not the other party.

Erc20 Token Txns Analytics Comments

Events

Date Time (UTC)	From	To	Value	Token
2020-05-28 20:02:27	0x9a0A34df1692f73e4aa...	OUT	540.47752122763116487	Dai Stableco... (DAI)
2020-03-10 17:57:15	0xb690d4b6e957199b8d...	IN	777	Katerium.com (KTH)
2020-02-07 16:16:35	0x9a0A34df1692f73e4aa...	OUT	540.47752122763116487	Sai Stableco... (SAI)
2020-02-07 16:16:35	Null Address: 0x000...000	IN	540.47752122763116487	Dai Stableco... (DAI)
2020-02-07 15:54:36	0x9a0A34df1692f73e4aa...	OUT	25,478.83877018	Compound Sai (cSAI)
2020-02-07 15:54:36	Compound cSAI Token	IN	540.47752122763116487	Sai Stableco... (SAI)
2019-05-31 12:10:48	0x9a0A34df1692f73e4aa...	OUT	20.419151	Reputation (REP)

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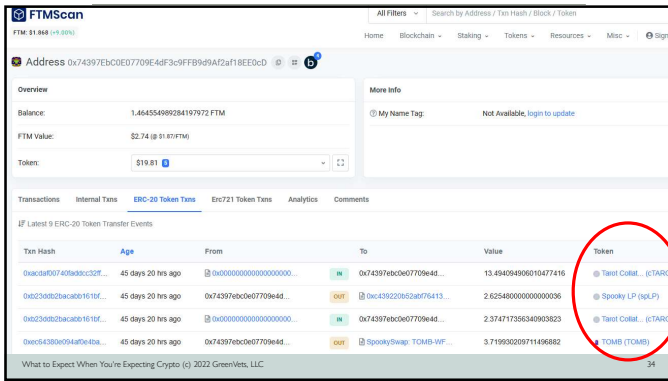
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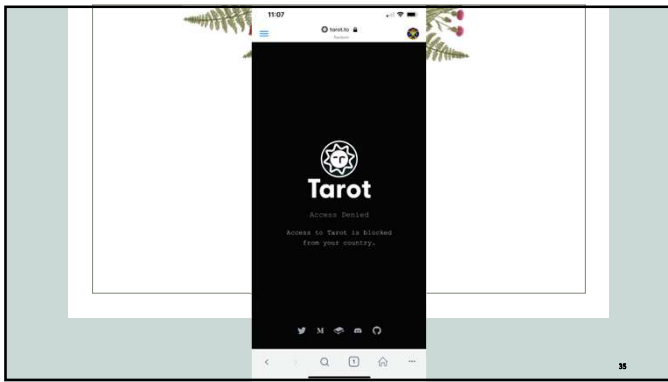
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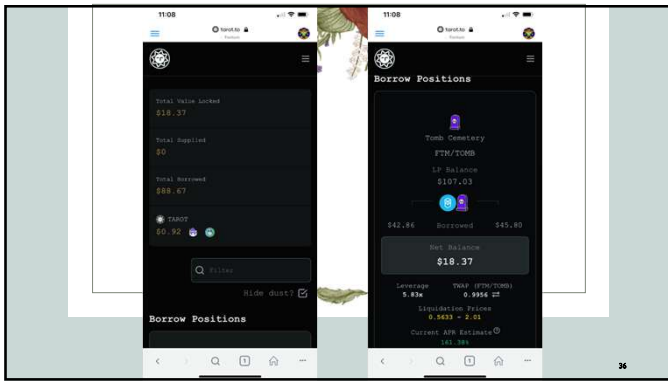
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## Wallets

Your keys, your coins.

- A group of addresses accessed by the same private key.\*
- Can you identify wallets on the blockchain? **Yes-ish.**
- Do wallets store crypto? **Nope. Wallets store access.**

Software

Hardware

Web App

Phone App

Paper

\*.Addresses usually look like long strings of numbers and letters; they identify locations on a blockchain.

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## Exchanges

Not your keys, not your coins.

- Third-parties that allow buying and selling of crypto (\$\$\$).
- Can you identify exchanges on the blockchain? **Yes-ish.**
- Do exchanges store crypto? **Nope-ish.**
- Can you identify exchanges in bank records? **You betcha.**

Binance

Gemini

Kraken

Coinbase

Mt. Gox

Huobi

And many more!

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### ADDRESS WALLET EXCHANGE

Stores the access to the addresses. Stores your **private key**.

**More than one** crypto per wallet.

**More than one** address per wallet.

Allows sends and receipts of crypto.

Can be recreated from **seed words**.

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ADDRESS WALLET EXCHANGE

Never ask for Private Keys or Seed Words in Discovery, without proper security.

Can be recreated from **seed words**.

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Crypto in Business

Interruption Losses	Compliance	Over-Reliance on 409(A)
Missing Crypto	Failures to Mitigate	Mining & NFTs

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Hey, what are your addresses?

Attorney

Computer goes brrrrr (running mining software) and earns bitcoins as a result of running the software

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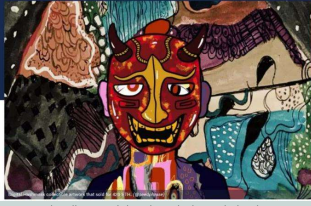
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**Rare Hashmasks Digital Artwork Sells for \$650K in Ether**

"The piece itself is chaotic, yet ordered. It invokes a concept of biblical dualism with the demon and halo," said the buyer.



<https://www.coindesk.com/artwork-ethereum-hashmask-650k>

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**Sold for 420 ETH**

"I also liked that there's a transparent copyright policy that gives the owner freedom over their non-fungible tokens, whereas most NFT projects have a license that restricts the buyer from commercializing their NFT."

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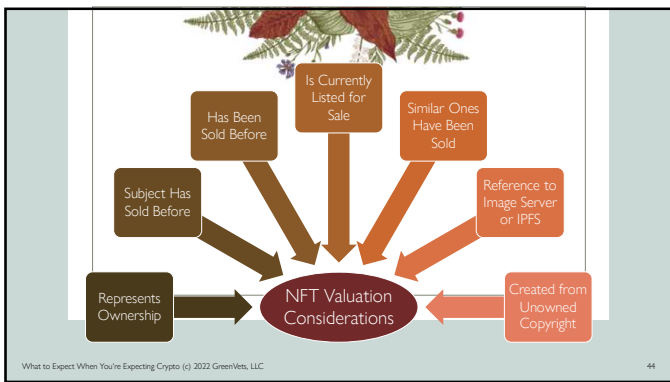
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**Fungible vs. Non Fungible**

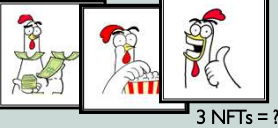


1 coin = \$50

5 coins = \$250



1 NFT = \$50



3 NFTs = ????

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Opensea: <https://opensea.io/collection/chickenft4>

These are real NFTs and you can buy them.

 chickenft3 Price ⬆ 40	 chickenft1 Price ⬆ 45	 chickenft2 Price ⬆ 50
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Crypto in Crime

"It wasn't me."	What the IRS Uses	Evidence Problems
Overstated Value	Code vs. Guns	

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CASE 1: Statement of Facts, Christopher Janczewski, IRS, Case 1:22-mj-00022-RMM

The information contained in this affidavit includes information provided by private entities that the U.S. Government believes to be reliable. In August 2020, Victim VCE announced a sizable reward related to the return of the stolen funds. Specifically, Victim VCE offered up to 5% of any property recovered. The total potential reward money exceeds \$400 million. The U.S. Government understands that Victim VCE has indicated that some portion of the reward could be made available even where the information provided indirectly leads to the recovery of funds (e.g., where a company provides information to the U.S. Government, that is then able to locate and restrain the funds based on that information). Entities who provided information to the U.S. Government in this matter may therefore be financially motivated. The U.S. Government vetted any leads as appropriate, with consideration given to the potential financial motivation. The U.S. Government is not a party to any agreement between Victim VCE and private individuals or entities and has not been a part of discussions regarding potential rewards.

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Data aggregators rely on false assumptions that call evidence into question.

Dorothy Haraminac

All transactions are on the blockchain.  
**FALSE**

Identity is persistent across time.  
**FALSE**

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Use corroborating evidence to ascribe.

a1075db55d416d3ca199f55b6084e2115b9345e16c5cf302fc80e9d5fbf5d48d 2010-05-22 18:16:31

1XPTgDRhN8RFnznIWCddobD9IKZatrvH4 → 17SkEw2md5avVNyYgj6RiXUqKNwKxaxFyQ 10,000 BTC

-10,000.99 BTC

↑

*laszlo*

↑

*jercos*

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And now, there's nothing.

*jercos*  
(in the past)

17SkEw2md5avVNyYgj6RiXUqKNwKxaxFyQ  
0.000.0

10000 BTC

1MLhZUVHgonJY4ZtsakoXtkcXDJ2EPU6RY

5777 BTC

???

13TEt2WMi58mexBanQ1jmXV1J7Abk2IEZ

4223 BTC

???

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### Bernard L. Madoff Investment Securities, 2008

U.S. Department of Justice photograph, 2009

One or More Bad Actors

Wildly disputed method: ignore statements and use "cash in less cash withdrawn". Is that appropriate?

Victim Investors

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86,202 bitcoins stolen Value at time: \$147,102 Value today: \$1.8 billion

### Bitcoin Savings & Trust, 2016

<https://www.wsj.com/articles/trendon-shavers-sentenced-in-first-bitcoin-securities-fraud-case-1469141141>

One or More Bad Actors

Average daily price of bitcoin when scheme was discovered. Is that appropriate?

Victim Investors

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### The Beginning of the Silk Road

BITCOIN PUBLIC LEDGER		
Sender	Recipient	Miner
-10,000.99	+10,000	+99
-5.75	+5.25	+50

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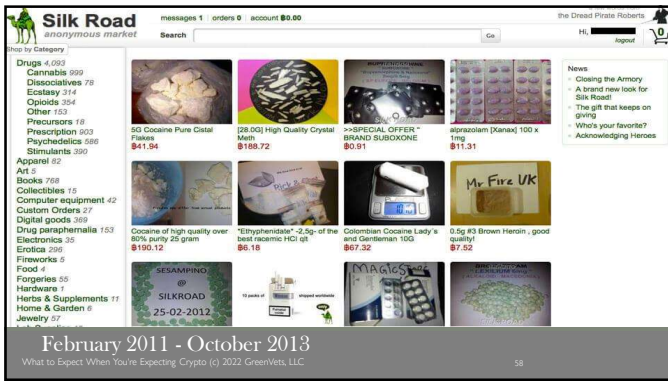
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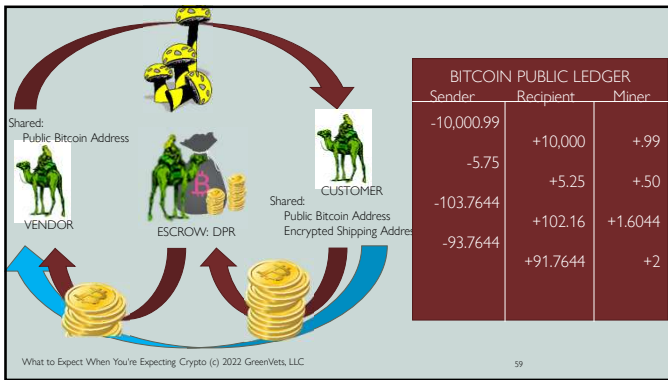
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## So many Amicus Briefs

- Search and Seizure Issues
- First Amendment Rights Violations
- Warrantless Inspections
- Third Party Doctrine re: Internet Use
- Right to Jury Trial Violation
- Judicial Factfinding Issues
- Unusually Harsh Sentence
- Unlimited Government Discretion

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08/08/2022

**SPECIALLY DESIGNATED NATIONALS LIST UPDATE**

**The following entity has been added to OFAC's SDN List:**

TORNADO CASH (a.k.a. TORNADO CASH CLASSIC; a.k.a. TORNADO CASH NOVA); Website tornado.cash; Digital Currency Address - ETH 0x8589427373D6D84E98730D7795D8f6f8731FDA16; alt. Digital Currency Address - ETH

**SANCTIONED**  
Blender.io Tornado Cash

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**Policy**

**Tornado Cash Developer's Arrest in the Netherlands Draws Community Protest**

After the detention of Alexey Pertsev, campaigners worry holding developers accountable for malicious use of their code could have a dangerous, chilling effect.

By Jack Schickler Aug 21, 2022 at 9:57 a.m. CDT Updated Aug 22, 2022 at 10:42 p.m. CDT

**Developers arrested - is Smith & Wesson next?**  
The creator of the thing used for a bad thing, but not the perpetrator.

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<https://www.coinDesk.com/policy/2022/08/21/arrest-of-tornado-cash-developer-draws-dutch-crypto-community-protest/>

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**If Dorothy is the expert, she's probably right.**  
Disclaimer: This slide is included for levity.

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A business card with a light green background on the left and white on the right. The left side features a vertical arrangement of botanical illustrations: a pink flower spike at the top, a green fern in the middle, and a green leafy branch at the bottom. A white rectangular box with a thin black border is centered on the left side, containing the text "Questions?". On the right side, the following text is printed in a simple, black font: "Dorothy Haraminac", "Dorothy.Haraminac@GreenVetsLLC.com", "(346) 400-6554", and "www.GreenVetsLLC.com".

Questions?

Dorothy Haraminac  
Dorothy.Haraminac@GreenVetsLLC.com  
(346) 400-6554  
www.GreenVetsLLC.com

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