

EAS 5830: BLOCKCHAINS

Cryptocurrencies

Professor Brett Hemenway Falk

Digital Money



微信支付
WeChat Pay



Ledgers

- These systems are efficient
 - Transferring money is just updating the ledger
- Cross-platform transfers are slow
 - What if everyone used the same platform?
- If everyone in the world used Venmo, transfers would be efficient
 - Monopoly!
 - High fees
 - Censorship

Ledger-based accounting



Alice



Bob

User	Balance
Alice	100
Bob	80
Clara	200
Dana	140
Elon	<u>182000000000</u>

Ledger-based accounting



User	Balance
Alice	100
Bob	80
Clara	200
Dana	140
Elon	<u>182000000000</u>

Ledger-based accounting



User	Balance
Alice	70
Bob	110
Clara	200
Dana	140
Elon	<u>182000000000</u>

Ledger-based accounting



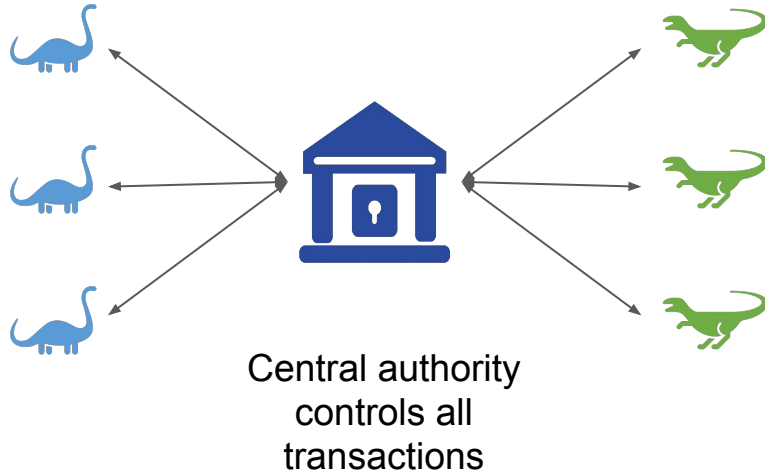
User	Balance
Alice	70
Bob	110
Clara	200
Dana	140
Elon	<u>182000000000</u>

- Bob does not “receive” anything
- Ledger is source of truth
- How does Alice authenticate herself to the bank?
 - Shared secret (password)
 - Digital signature
- Easy to back up a database
- Hard to decentralize *updates*

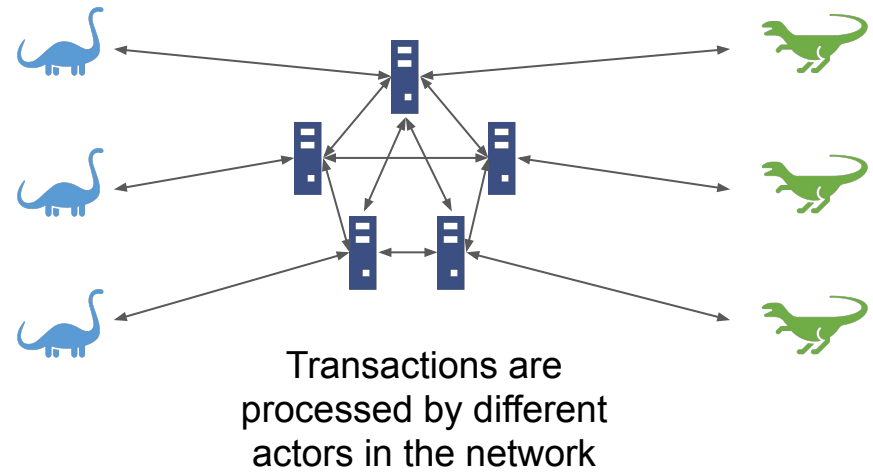
Single ledger without a monopolist

- Blockchains are about getting the benefit of a single ledger without the problems of a monopolist
- It's easy to replicate a ledger
- The challenge is updating the ledger – who's allowed to update?
- Bitcoin introduces a “ten minute monopoly”
 - Single “miner” is chosen by a lottery mechanism
 - Miner has monopoly over transaction processing
 - High fees
 - Censorship

Centralized System



Decentralized System



What is the ledger tracking?

- Dollars? Renminbi?
- If you track government-issued “fiat” currency you’re subject to the government’s monetary policy
- If the whole world used Venmo:
 - Venmo would be a monopolist
 - Still subject to US monetary policy (inflation)

The Times 03/Jan/2009 Chancellor on brink of second bailout for banks

—Satoshi Nakamoto

“the enemy is the Fed, the enemy is the pound, the dollar, the euro the people making those decisions”



2008 Financial Crisis

Will Government Bailouts Lead to Inflation?

BY CATHERINE RAMPELL SEPTEMBER 18, 2008 3:15 PM

Analysis of the 2008 bailout

- No inflation
- "True" cost of \$500B – main beneficiaries large banks, pension funds
- Taxpayers did not get a "fair" return

The Cantillon Effect

The closer you are to the source of money creation, the more you benefit.



Everyone Else



Entrepreneurial Class



Ultra Wealthy



WHAT IS MONEY?

Money is crucial to regulating our lives and economies. Here's an essential guide to understanding money and its role in today's economic system.

BITCOIN MAGAZINE • APR 24, 2023

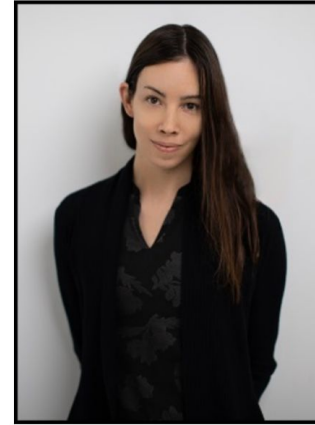
BITCOIN

What is Money, Anyway?



Published: March 2022

Money is a surprisingly complex subject.



This site provides equity research and investment strategies to give you the insight and data you need for managing your money through all market conditions.

THE SAYLOR SERIES

WHAT IS MONEY?

MICHAEL SAYLOR & ROBERT BREEDLOVE



“back when I got into crypto ever you could not be in crypto without knowing what a rai stone was that is probably the single biggest calling card of what generation of crypto you came into” -**Haseeb Qureshi**



DEBT

THE FIRST
5,000 YEARS

DAVID GRAEBER

"A BRILLIANT, DEEPLY ORIGINAL
POLITICAL THINKER."
REBECCA SOLNIT, AUTHOR OF
A PARADISE BUILT IN HELL

THANK YOU! COME AGAIN!

READ BY GROVER GARDNER • UNABRIDGED

Research Study

Bitcoin First

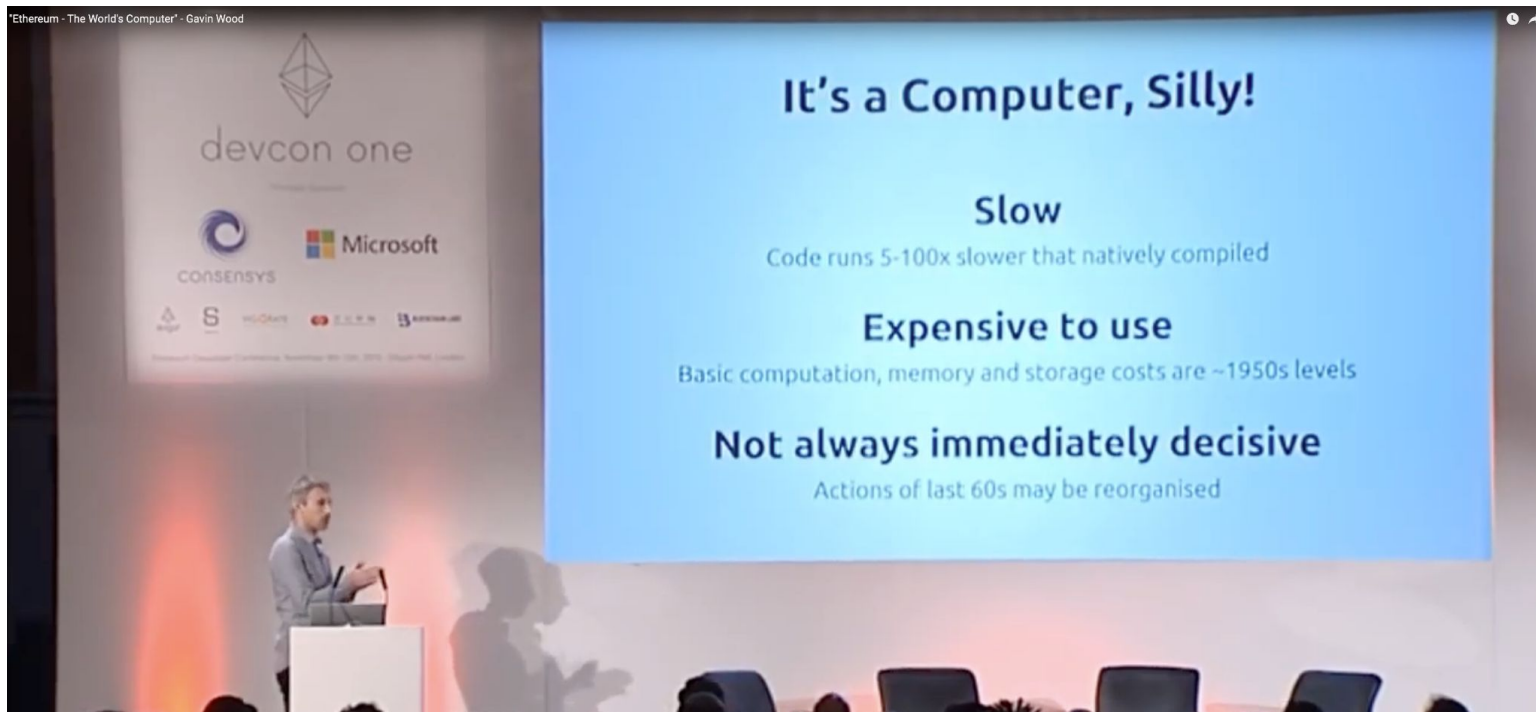
Why investors need to consider bitcoin separately from other digital assets.

by Chris Kuiper and Jack Neureuter

[Home](#) > [Blog](#)

[NEWS](#)

Ethereum, Smart Contracts, and the World Computer



It's a Computer, Silly!

Slow

Code runs 5-100x slower than natively compiled

Expensive to use

Basic computation, memory and storage costs are ~1950s levels

Not always immediately decisive

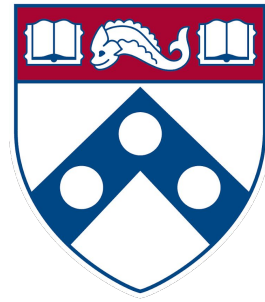
Actions of last 60s may be reorganised

Ethereum

- This class will focus on Ethereum
- Single, shared computer
- Programs are called “smart contracts”
- ETH doesn't need to replace the dollar
 - [Ethereum is FinTech](#)



“Bitcoin and Ethereum are two very separate things, I used to describe it as like Ethereum is the octopus and Bitcoin is like a revolver with one bullet in it and depending on which enemy you're gonna fight like maybe your enemy is one who's scared of octopuses or like you're fighting him underwater then you want the octopus the revolver won't work there, but in other situations like the octopus isn't going to help you and you just you need to shoot the guy so and I think that the enemy is The State, right, and I want both an octopus and the gun, to shoot The State and throw the octopus.” - **Eric Wall**



Penn
Engineering

UNIVERSITY *of* PENNSYLVANIA

Copyright 2020 University of Pennsylvania
No reproduction or distribution without permission.