NO, YOU DON'T REALLY OWN YOUR SECURITIES

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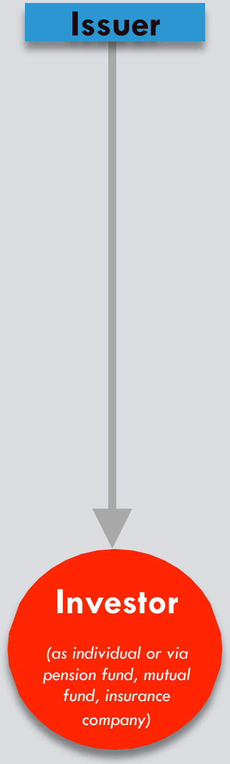
PROBLEM←→SOLUTION

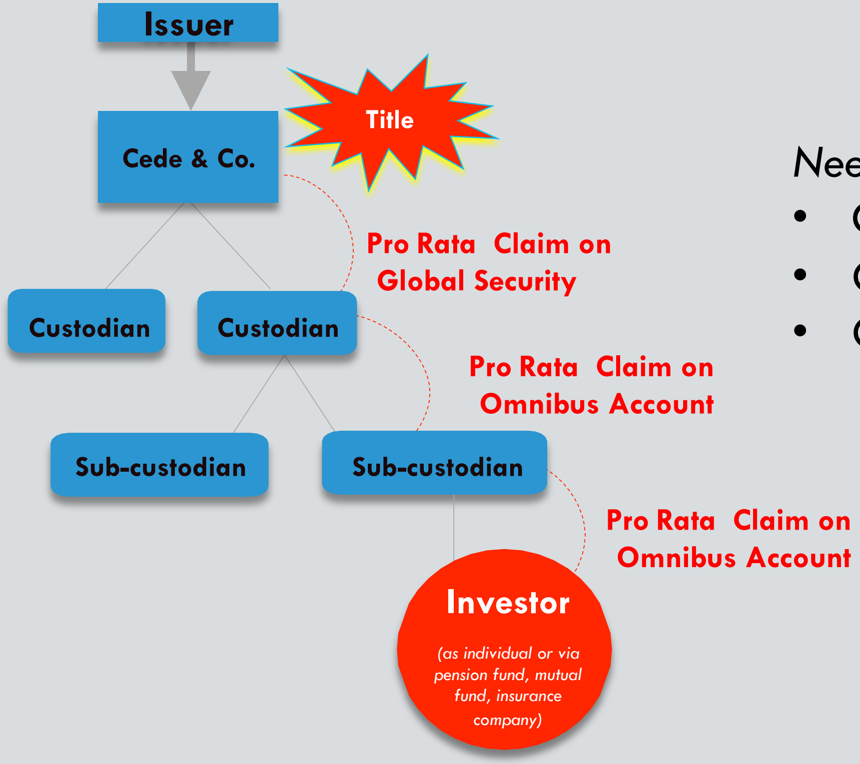
- When you buy securities, you do not actually buy securities
- Instead, you buy an I.O.U.
- Blockchains can fix this

HOW SECURITIES ARE OWNED

How It Used to Work:



How It Works Today (since 1994):



Needlessly introduces:

- *Counterparty Risk*
- *Operational Risk*
- *Over-issue Risk*

Source: based on "Restructuring Securities Systems Processing," Bank of Finland Discussion Papers, by Harry Leinonen, June 3, 2003.

MARKET STRUCTURE ISSUES

1. Registered owner of securities ≠ true owner

+

2. Records kept on aggregate basis (omnibus accounts)

+

3. Chain of custody consists of multiple leveraged intermediaries

+

4. T+3 settlement delay

=

Main Street loses. A few privileged players win.

HOW SECURITIES USED TO BE OWNED

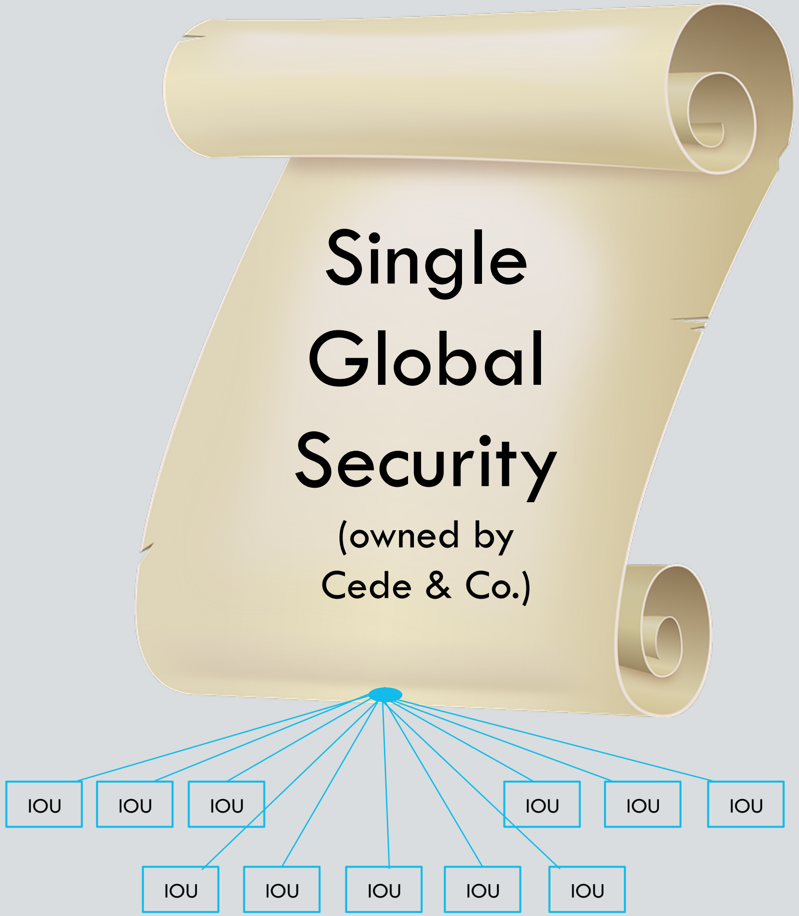
- Title = paper certificate
- Direct ownership
- Each numbered

HOW SECURITIES ARE OWNED TODAY

- No direct ownership (unless paper certificate, which is rare)
- Single "global security" for each issue
  - title to global security held by Cede & Co., as nominee of the DTC
  - "security entitlements" (IOUs) are issued against the global security
- Immobilized
- Dematerialized
- Fungible
- Omnibus accounts for IOUs at each intermediary layer

Result #1: Cede & Co. owns 99+% of securities outstanding; insurers (& other investors) own IOUs

Result #2: the system doesn't always keep perfect track of who owns what



UCC ARTICLE 8 (SECURITIES): WHAT HAPPENED?

	Pre-1978	1978 Amendment	1994 Amendment
Who Holds Title?	Owner	Owner	Central Securities Depository (Cede & Co.)
Owner Owns	Property Right	Property Right	Contractual Right (IOU)
Legal Status	Title	Title	Contractual Right (IOU)
Evidence	Paper Certificate	Book Entry on Issuer's Records	Your Agent's Records, Their Agent's Records
Legal Form	Security	Security	"Security Entitlement"
Direct vs. Indirect	Direct	Direct	Indirect Pro Rata Share of the Security Entitlement Issued by Your Securities Intermediary, Which Holds an Indirect Pro Rata Share of the Security Entitlement Issued by Its Securities Intermediary, Which Holds a Pro Rata Share of the Global Security Held at the CSD (Cede & Co.)

Sources: "Handbook of Key Global Financial Markets, Institutions and Infrastructure," edited by Gerard Caprio, Jr., Chapter 50 (Securities Settlement Systems), 2013, p. 561; "Revised Article 8 of the Mississippi UCC: Dealing Directly with Indirect Holding," Bryn R. Vaaler, Mississippi Law Journal, Winter 1996, Book 2; "Policy Perspectives on Revised UCC Article 8," James S. Rogers, Boston College Law School Faculty Papers, 1996.

WHEN MIGHT THIS BECOME A REAL PROBLEM?

- If an operational failure happens
- If securities over-issue happens (“naked” selling)—artificially suppresses value
- If markets seize, or a broker/dealer or custodian fails

These are low-probability but high-severity risks

SPECIFIC EXAMPLES

- Examples of Uncovered Securities Risk:
  - Repo market: multiple parties report that they own the same asset at the same time. For example, using IMF's estimate of collateral chain length, 1 in 3 parties who think they own a U.S. Treasury bond actually does (1)
    - IMF economist recommends that regulators back out these double-counted assets when assessing financial institutions' solvency (1)


Funds Challenging Dell Bid Find Shares Aren't Really Theirs

- Examples of Counterparty Risk:
  - Lehman, MF Global, REFCO failures
  - "Living wills" of the top 3 custodian banks were deemed seriously deficient by regulators and must be corrected by Oct. 1, 2016


Bank of America to Pay $415 Million to Settle SEC Probe

The bank's Merrill Lynch brokerage violated rules aimed at protecting customer assets, the regulator says

- Examples of Operational Failure:
  - MF Global customer account breach (2011) (2)
  - Bank of America $415 million settlement for using customer securities for its own profit (2016) (3)
  - T. Rowe Price/Dell appraisal rights "continuous ownership" issue (2013-2016) (4)

(1) This is my translation of the work of IMF economist Manmohan Singh, whose studies of the length of collateral chains is available here, here, here, here and here. Singh has recommended that regulators' financial stability assessments be adjusted to back out "pledged collateral, or the associated reuse of such assets," which has not been standard practice.

(2) MF Global: customer accounts were breached as the firm was failing.

(3) Bank of America: resolved SEC accusations that it misused customer cash and securities, essentially providing "interest-free loans of customer money for its own profit."

(4) T. Rowe Price: announced a $194 million charge to compensate investors for mistakenly voting in favor of Dell's LBO and losing appraisal rights. When Dell's acquisition closed, DTC issued paper certificates for Dell shares that were subject to the appraisal process (in the name of Cede & Co) and delivered them to T. Rowe Price's custody banks. This violated the policies of 2 custody banks, so the custody banks directed DTC to re-issue the paper certificates in their clients' names instead of Cede & Co. By changing the name of the record owner of the shares, the shares no longer met the continuous ownership requirement to maintain appraisal rights under Delaware law and therefore forfeited the appraisal rights—even though T. Rowe Price neither sold its shares nor asked for the name change. Stories here and here.

WHO IS MOST AT RISK? LONG-ONLY INVESTORS

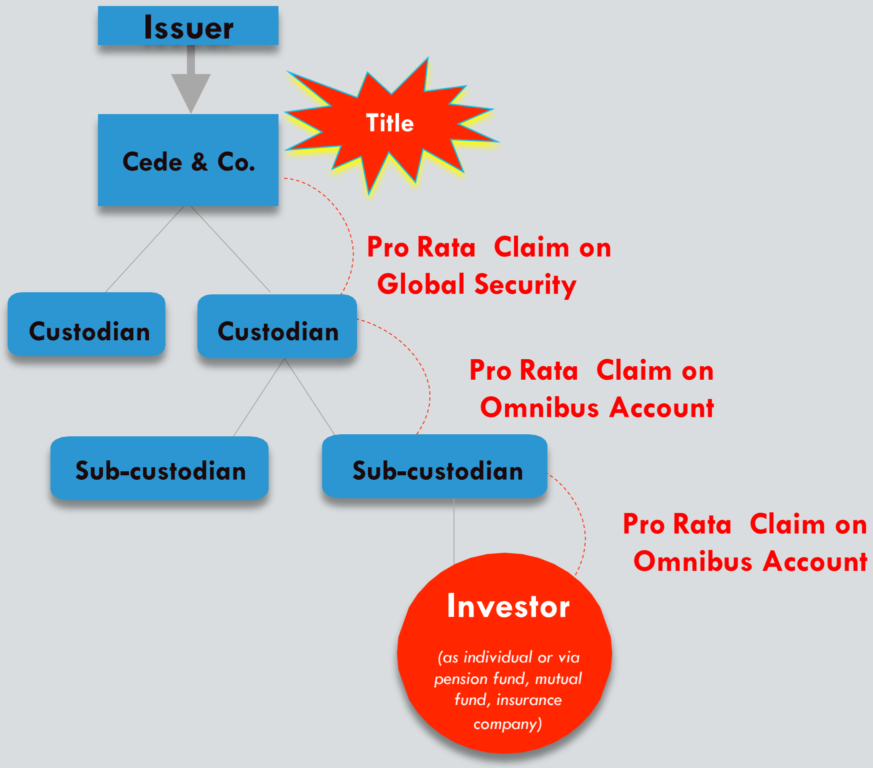
- Pension funds—personal liability for ERISA fiduciaries
- Mutual funds—asset managers bear cost of operational issues (e.g., TMPG fails)
- Insurance companies—why accept unnecessary counterparty & operational risks?

Questions long-only investors should ponder:

1. Why not self-custody your securities?
2. Why not hold your own direct account at the DTC?
3. Why not prohibit use of omnibus accounts by your custodians and broker/dealers?
4. And in the meantime, why not welcome blockchains?!

HOW BLOCKCHAINS FIX THIS

How It Works Today (since 1994):



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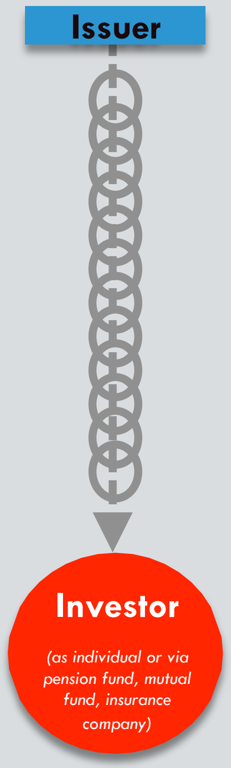
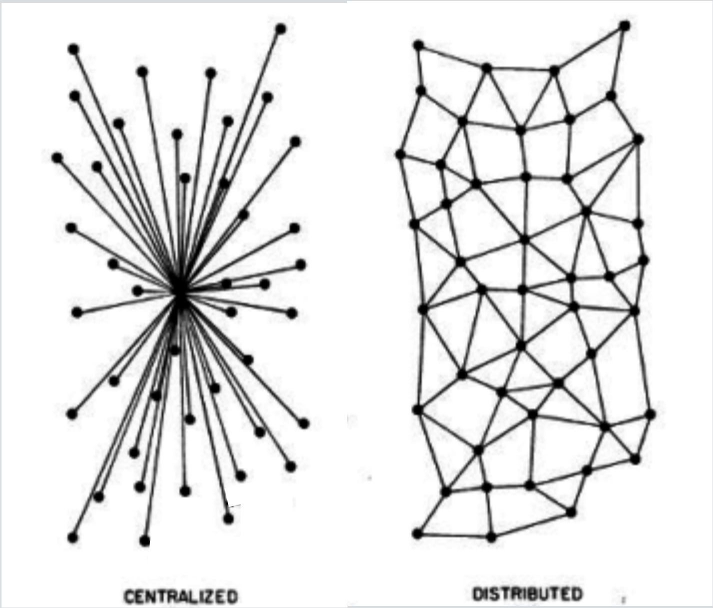
In a Blockchain World:



- *Counterparty Risk*
- *Operational Risk*
- *Over-issue Risk*

WHAT IS A BLOCKCHAIN?

- Blockchain: new type of database
  - All network participants see the same data at the same time
  - Shared, distributed—no need to reconcile copies
  - Immutable, time-stamped—perfect audit trail
  - Consensus mechanism automatically synchronizes data across network
  - Superior cybersecurity



- Smart contract self-executes when terms and conditions are met

SIGNIFICANCE OF DELAWARE'S BLOCKCHAIN INITIATIVE

- Proposed changes to corporate law would create option for companies to register on a blockchain in lieu of paper certificate, thus enabling securities offerings on a blockchain

- Delaware also using blockchain for state records (including archives, liens, and UCC & other filings)

https://bitcoinmagazine.com/articles/delaware-blockchain-initiative-to-streamline-record-keeping-for-private-companies-1462812187

CONCLUSION

Blockchains can make securities markets fairer, safer & more transparent!

- Clarify ownership of securities
- Eliminate counterparty and over-issue risk
- Reduce operational & fiduciary risks
- Restore property rights to rightful owners

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