

The Evolution of Accounting from Bullae to Blockchain Ledgers and Cryptocurrencies – *a historical perspective*

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OF ACCOUNTANCY

- Accounting is the recording of value and transfer of value between entities and is therefore intertwined with the concepts of money (the representation of value) and numbers.



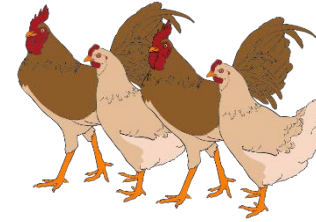
The transition from concrete to abstract counting was thought to derive from accounting and money in ancient Mesopotamia

How Did Money Evolve?

- Before money there were barter systems
- Money (or currency) evolved as a matter of efficiency and standardization of value



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Attributes of Money

- Must be accepted as money by others
- Have an assigned value or worth
- Should be easy to carry.... there are exceptions to this rule





Other examples of money

- Miniature tools
- Gold Aztec dolls
- Parmagiano cheese
- Cocoa beans
- Egyptian and Celtic ring money
- Cowry shells
- Dolphin teeth

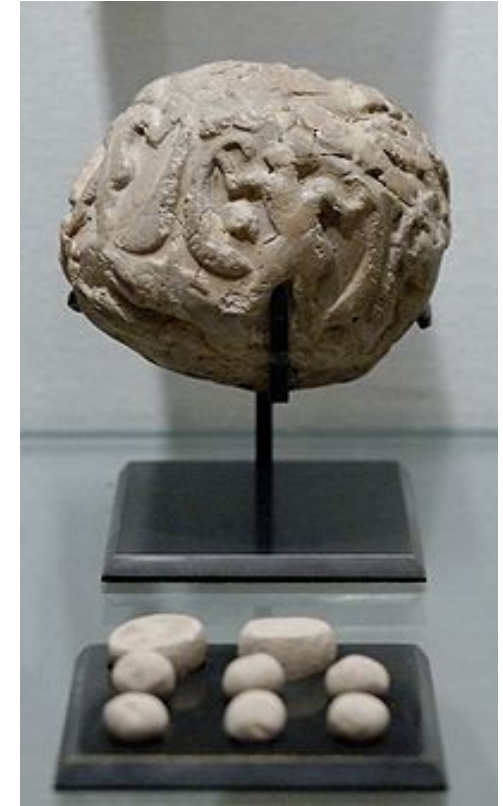


CryptoCurrency



It's a Matter of "Trust" - Accounting Evolves...

- Originally we had single entry accounting
- Bullae
- Tokens
- Clay scripts



From Single to Double Entry

- In 1458, Benedetto Cotrugli wrote a book on double-entry accounting but it was not published until after Luca Pacioli published *Summa de Arithmetica, Geometria, Proportioni et Proportionalita*.
 - Debit = “he owes”, Credit = “he trusts”
- Provides a means to audit the accounting
 - But does not stop fraud entirely



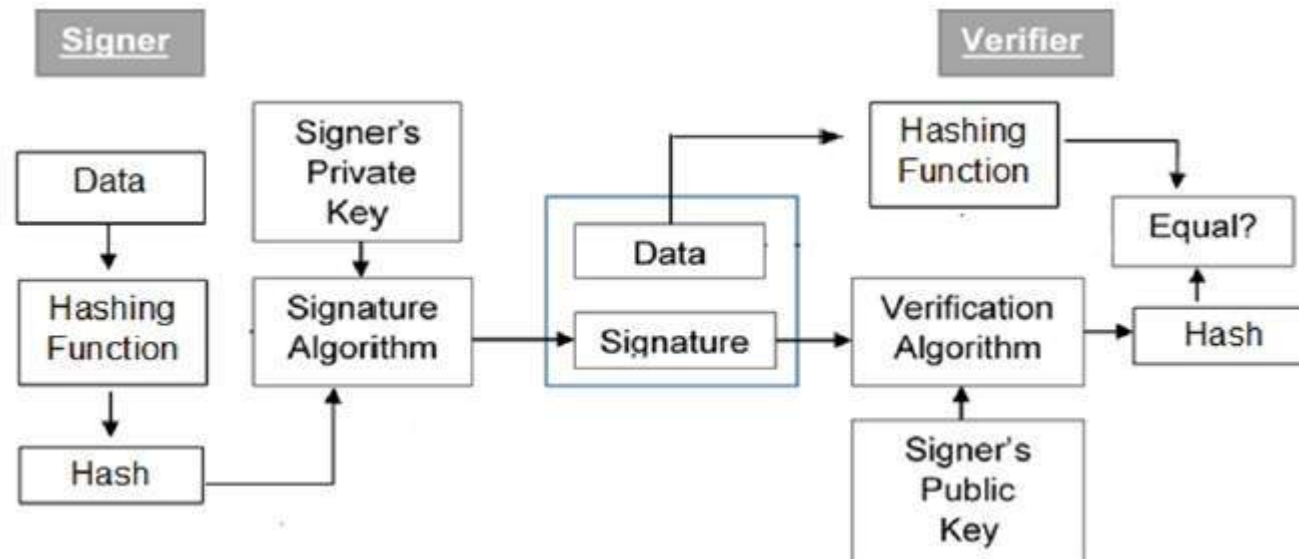
How do we make accounting more “trustworthy”?

- One way is by using blockchain technology
 - Decentralized ledger
 - Permanently recorded
 - Consistently reconciled and updated using cryptography.
 - Extremely difficult to manipulate entries or tamper with the data
- “...what makes blockchain so important is its ability to automate trust and transparency among all parties using it.”

[Busting-the-myths-and-understanding-the-true-potential-of-blockchain, Forbes 08/27/2018]

Cryptography Adds Trust to Transactions

- Digital signatures provide some means of authenticating and protecting each side of the transaction when external parties are involved
- ...but it is not failsafe and does not fit every accounting situation



Cryptography and the Signed Receipt

- Signed receipt is created:
 - Alice and Bob exchange value
 - Ivan is the intermediary or issuer
- Bound by a signature as a “Ricardian contract”
 - Using a message digest
- The collection of signed receipts become the accounts that could replace double-entry bookkeeping....!

2: A Signed Receipt

<u>User's Cheque</u>	From Alice
	To Bob
	Unit Euro
	<u>Qty</u> 100
	Com Pens
Alice's sig	
From	Alice
To	Bob
Unit	Euro
Quantity	100
Date	2005.04.10
Ivan's signature	

Triple-Ledger Accounting

- Blockchain records a transaction between external parties by recording a transfer between “wallet” addresses in the same public ledger
- Transactions are cryptographically sealed (verified)
- And a receipt is issued
- Result: every transaction is recorded in three places



Blockchain Events Post to Three Ledgers

Alice's Books

Debit	Credit
5	
	2
	9
10	

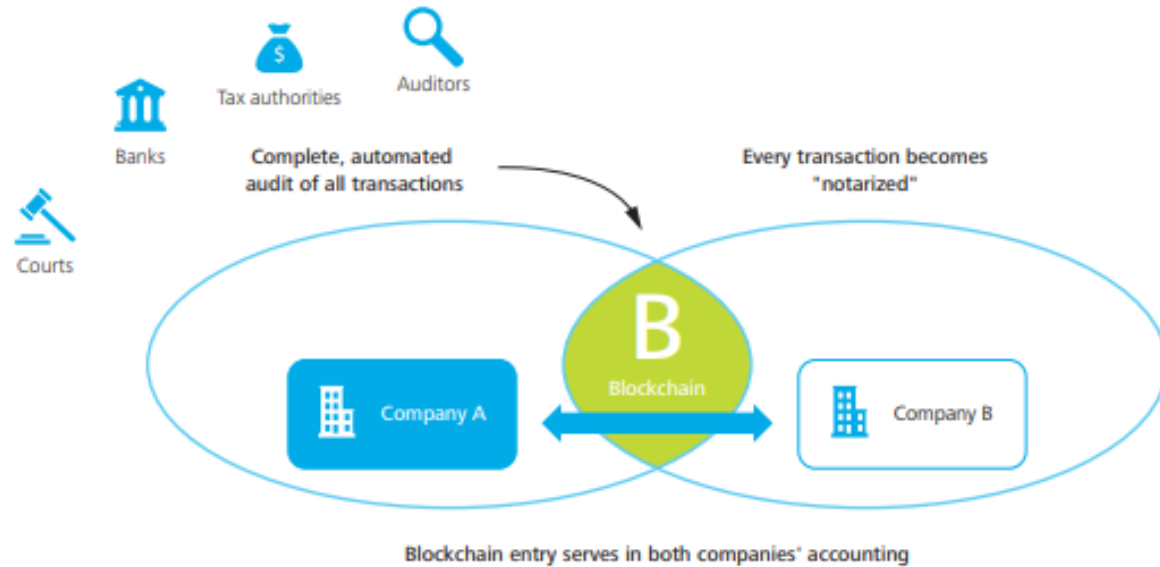
Bob's Books

Debit	Credit
	5
2	
9	
	10

Public Book

Alice	Bob
-5	5
2	-2
9	-9
-10	10

Blockchain as a Shared Ledger



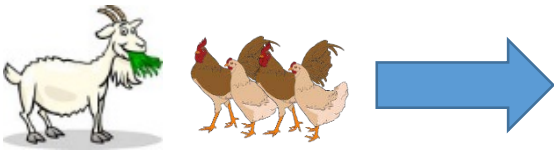
Triple Entry vs. Triple Ledger

- According to theorists, triple entry accounting is not part of blockchain
- Triple entry, aka momentum or transitional accounting is a more complex accounting system
 - proposed by Yuji Ijiri in 1989
- The third entry provides the values to estimate future earnings based on present and future transactions, not historical data.

You decide ...

- Triple Entry or Triple Ledger

Thank You!



Assets		=	Liabilities		+	Equity	
Beg. Balance			Beg. balance			Beg. Balance	
+ Increases	- Decreases		- Decreases	+ Increases		- Decreases	+ Increases
End. Balance			End. Balance			End. Balance	



Alice's Books		Bob's Books	
Debit	Credit	Debit	Credit
5			5
	2	2	
10	9	9	10

Public Book	
Alice	Bob
-5	5
2	-2
9	-9
-10	10

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