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"Homo sapiens rules the world because it is the only animal that can believe in things that exist purely in its own imagination, such as gods, states, money and human rights."
Yuval Noah Harari

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Tokenization on the Blockchain
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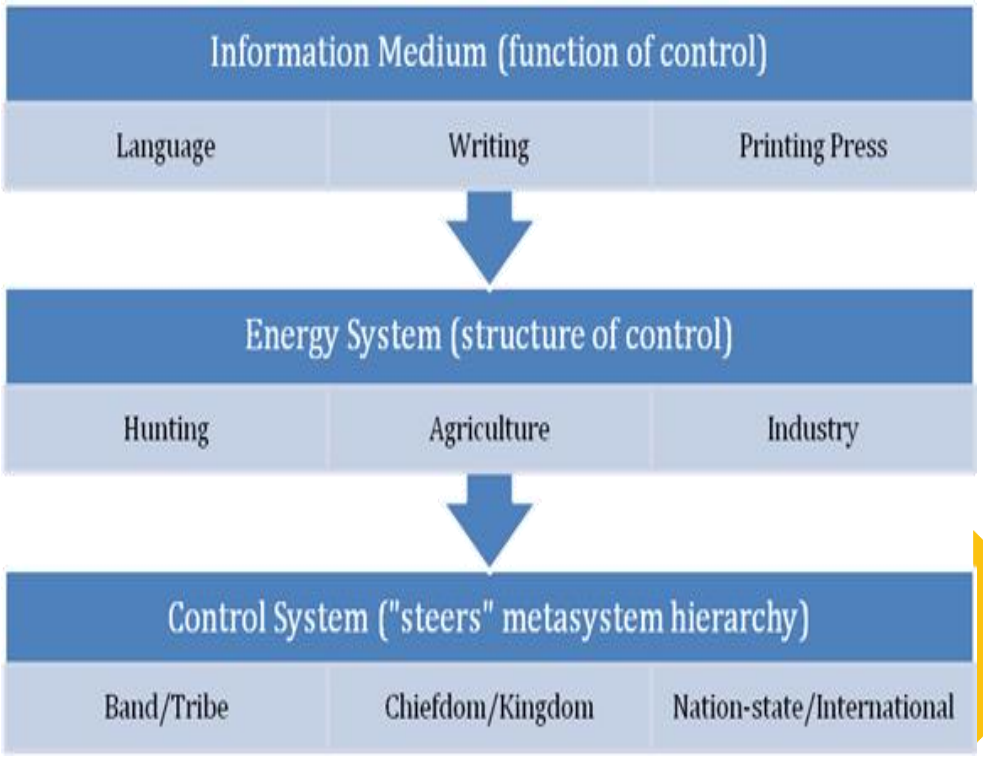
Transition – sustainable energy systems

Human metasystem theory

- Draws from the idea of living systems achieving higher systems of organizations by coordinating previously disparate subsystems
- The metasystem emerges between two levels of organization through coordination of new controls while utilizing a new information medium to integrate disparate subsystems
- The modern human system is the result of control systems that have emerged through a energy-information nexus
- Transition of this nexus happens through cultural and technological (socio-technical) processes



- Firms are not incentivized to share data.
- Is there a way to change this?

Contents

Background

- From industrial production to a new form of global services and information economy
- Redefinition of economic model of the industrial age
- Internet coordinated emerging global information and services economy
- Providing secure distributed infrastructure for emerging economic system

- Transition builds upon major trends that began in the late 20th century
- Privatization and globalization, financialization and the rise of online platforms
- Convergence as blockchain networks merge economics and information technology
- A new economic paradigm

To understand more refer to:

- *Jeremy Rifkin's Zero Marginal Cost Society (https://www.youtube.com/watch?v=m7M3NgURs54)*
- *Eric Posner and Glen Weyl's Radical Markets*

Evolution of Economic Systems

- Privatization helped create spheres of activity in markets
- Globalization expanded markets around the world
- Financialization connected real economy into an integrated information-based financial system
- The platform economy creates new forms of user-generated networks
- The blockchain brings these previously latent disparate trends together in synergistic powerful new ways
- A new economic system being built on top of these previously disconnected building blocks
- Global, that reflects the underlying logic of services
- An economic model that is for the first time in harmony with its underlying technology of information

Understanding value

- One of the Foundational activities of human civilization is exchange of value between people
- Societal advancement corelated with the speed of value exchange within its members
- Increase of value exchange at the heart of heightened collaboration
- We exchange all types of value - time, labor, products, access, or information (data)
- Money was invented as a way to solve inefficiencies by creating a universally accepted medium for storing value
- Money was the catalyst of early markets and fostered many new trading opportunities that were not possible with barter
- Along with money came record keeping (accounting)

Ledgers

- Economics is based on information
- A record of ownership that defines who owns what and what is exchanged
- This is what we call ledgers
- In advanced economies everything that exists, exists in a ledger
- These ledgers are maintained by trust - the government and legal system
- The legal system determines who gets to make entries into those databases
- It grants power to various institutions that prove their trustworthiness to the legal system:
  - Banks
  - Insurance companies
  - Hospitals
  - Enterprises
  - Institutional investors etc.
- These centralized authorities manage complex set of records or databases
- Flows within the economy
- They control how value is represented

A brief history of value creation

- Valuing goods, services, and even money, need verifiable ways to calculate and prove value
- Accounting books or ledgers for record is a method to properly monetize value and record activity/ownership within open markets
- It brings increased trust to valuations
- Evolution of trade requires trust
- Trust has been traditionally been provided by third parties to facilitate value exchange through consensus
- Digital technologies offer the infrastructure for monetizing and exchanging value at very low and at times no cost

DLT or blockchain as an organizational tool

- Distributed ledger technology (DLT) a general term for describing the family of technologies deriving from or built to support distributed ledgers
- Purpose of DLT is to replace trusted third parties that process and store records in a centralized manner with decentralized computer protocols where every user on the network verifies the accuracy and authenticity of all records in one singular, non-centrally-owned ledger
- Instead of a central server processing and storing records, thousands of computers (nodes) form continual consensus around the changes in record keeping (state changes) of the network
- Each node participates in consensus and stores a copy of the ledger
- DLT keeps records of transactional activity, and can digitize the ownership of assets (tokenization) and process contract logic (smart contracts)

Tokenization

- Of the use cases on DLT, the tokenization of assets is an important one
- With smart contracts, blockchains can take anything of value and turn it into a tradable token with a unique and publicly verifiable identity
- All kind of assets can be tokenized, such as equity, title ownership, products, and derivatives contracts
- It keep accurate and censorless record of ownership
- Opens up new markets with increased liquidity for these assets to trade
- Tokenization has led a to new asset class called utility tokens — a representation of value for network access and usage, which is limited in supply
- It's one of the best ways to monetize open protocols
- Tokenization has also lead to the proliferation of stablecoins — fiat currency on the blockchain, and exchange tokens — utility tokens for exchange discounts/usage
- Stablecoins and exchange tokens have proven instrumental for traders wanting to hedge against volatility and save money on exchange activity

Tokenization for firms

- Opens up unlimited opportunities for tokenizing data assets at various levels of interaction
- These can then be traded and new business models built around the diverse sets of data assets
- Opens up opportunities for monetizing data in related as well as unrelated and non-competitive business environments

"Show me the incentive and I will show you the outcome."

Charlie Munger

Incentivizing a token-based system

- Cryptoeconomic primitives - Protocol based incentives systems that are uniquely enabled by tokens. Also referred to as “tokenized economic games”, they enable the coordination and allocation of capital to achieve a shared goal via the use of various economic and cryptographic mechanisms. (*Curation Markets Update: 28 February 2018— Simon de la Rouviere).*
  - A Cryptoeconomic Primitive should be a self-sustaining system, and its intrinsic token must be a necessary element of that system. It shouldn’t require anything other than itself to function and the removal of the token would cause it to fail or work less effectively than the system with a token.
  - A Cryptoeconomic Primitive should result in the predictable coordination of a set of actors (whether it be humans or machines) towards some specific shared goal or outcome. This can include predictably failing in certain situations and knowing limitations.

Cryptoeconomics:

The combination of cryptography and economics to create decentralized P2P networks. Cryptography is used to prove things that happened in the past, and economic incentives are used to encourage desired properties to hold into the future. Code and economics are intrinsically interlinked.

Decentralized collaboration in action

Curation Markets:

- A field of primitives that are specifically designed to curate information and reduce information asymmetry.
- The most notable primitives are Token Curated Registries (TCRs) and Curved Bonding.
- Both share the same goal to incentivize token holders to curate information, but differ in behavior and output
- Token Curated Registries give you a binary outcome (i.e. is this thing “in” or “out” of the registry)
- Curved Bonding systems give you a gradient score of the relevance of something.

Use cases

- AdChain (where TCRs originated) uses TCRs for maintaining a list of domain names accredited as non-fraudulent for advertising purposes
- The Ocean protocol uses both TCRs and Curved Bonding in its decentralized data exchange: TCRs are used for the list of participants and Curved Bonding is used to rate the relevance of data.
- Relevant uses Curved Bonding in its social news reader app to create an “Open Quality Metric” for curation
- Messari uses TCRs to create a decentralized Self-Regulatory Organization that lists legitimate tokens and cryptocurrency projects.

Token building blocks

- Curation: TCRs, Curation Markets, etc
- Proofs of human or machine work
- Identity
- Markets: Prediction Markets, Trading, Bonding Curves, etc
- Micro-Economical: DAOs, Stablecoins, etc
- Consensus: Voting, staking, etc
- Reputation
- Governance / software updates
- Third-party arbitration
- Inter-operability

(Source: http://tokenengineering.net/building-blocks)

From individual to embededness

- Data is always accumulated within contexts
- Your data never belongs to you alone
- Data always exists and acquires meaning in relationships
- The focus needs to be on figuring out those relationships
- Mapping networks alone is not good enough
- Building a compass as a sense making tool
- Helps create the right incentives for sharing
- From value creation and appropriation to value creation and circulation
- Dynamic identities
- From who am I to who do I want to be?

From scarcity to abundance

- Data is abundant
- Ledgers are designed to track the relative wealth
- Wealth has been measured by a combination of debt notes and valuable limited resources (i.e. gold-backed dollars, or, today, just the physical bill itself)
- Goods were finite and some will always remain even with highly efficient use, but they are now more edge cases
- In the information age, data is wealth
- Opportunity for creating and circulating economic value in infinite ways

Thank you!

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