IM 450-01 Issues in IM: *Blockchain, Cryptocurrency, NFTs*

Spring 2022

Class 4— February 1

class 4:

Blockchain:

-Which people and what institutions will be most seriously harmed by this new technology?

-What sort of people and institutions gain special economic and political power from this new technology?

First: What did you learn?

- **Anything you'd like to share about your learning while reading about blockchain tech?**

Caveats

- As you search and read, you'll see how much questionable info there in on this new tech.
  - There's a lot of money to be made.
  - Over-involved parties are not particularly reliable sources.
- ACADEMIA IS NOT IMMUNE
  - Which was also part of the problem with academic interest in the Internet
    - In order to understand the stuff, one has to get involved.
    - In some cases, in order to study the stuff, one has to spend MUCH $ so gets caught up in sponsorship traps.
    - Folks who like/support the stuff are way more likely to research it, especially at first, than are folks who don't (so ignore it).
    - Schools want to "appear hip" AND to capture students over it (just like companies who want to build a new client/user base).
  - Having said this, academic reports usually include "limitations," "concerns," and/or cogent analysis of the other side of the issue (NOT ALWAYS).
  - And of course, some places are simply far too implicated in the development of new media/computational stuff to get critical distance (for example Stanford & MIT or places that have already decided they need majors, degrees, institutes, or conferences).

Which people and what institutions will be most seriously harmed by this new technology?

- **Scalability:**
  - **Scalability refers to the time needed for propagating, processing, and validating transactions. The higher the number of nodes is, the more limiting network bandwidth, overall storage space, and power consumption become.**
- **Power consumption:**
  - **Blockchains associated with cryptocurrency, alone, already consume far more energy and present far greater environmental concerns than is acceptable. Adding the many other use cases multiplies this problem exponentially.**
- **These two problems present harms to any and all small operators. Only the largest, corporate or governmental, participants will be able to present reasonable solutions for these two problems. This factor squeezes out many of the operators/operations who/that would potentially benefit.**
- **This factor also suggests that this now decentralized and distributed technology will become centralized on platforms. As we have seen, this move negates many advantages to large numbers of participants. The tech gets "easier" for the masses to use, but "belongs" to only the big and strong.**

Which people and what institutions will be most seriously harmed by this new technology?

- Lack of regulation creates a risky environment
  - Lots of hacking; loads of financial losses, often falling on those who can least afford them.
- Complexity means end users find it hard to appreciate the benefits
  - Still “early adopter” stuff.
  - Ease-of-use will mean “the platforms” have taken over and of the early advantages disappear.
  - Blockchain requires high-end cryptography and programming far beyond most user.
- Some of the “Establishment” has a vested interest in blockchain failing; Others want it to succeed. Common folks get caught in the middle without being able to predict which side wins. Pick the wrong side, you lose.
  - The hyped use-cases are “most promising.” Not many reports of “most effective, most indispensable.”
  - Over time, we’ll have to compare supply chain management in blockchain to competitors just using databases on big computers & servers. Those who go big on blockchains might well lose a lot of money for their trouble.

Which people and what institutions will be most seriously harmed by this new technology?

- We'll look closer at cryptocurrency and energy later, but for now, it's the most extensive use-case for blockchain tech.
- "The environment" isn't a person or institution, quite. Nevertheless:
- The Bitcoin network consumes at least 2.55 GW of electricity currently, and that it could reach a consumption of 7.67 GW in the future, making it comparable with countries such as Ireland (3.1 GW) and Austria (8.2 GW). (early 2018)
  - https://www.cell.com/joule/fulltext/S2542-4351(18)30177-6
- Bitcoin miners are expected to consume roughly 130 Terawatt-hours of energy (TWh), which is roughly 0.6% of global electricity consumption. This puts the bitcoin economy on par with the carbon dioxide emissions of a small, developing nation like Sri Lanka or Jordan. (2021)
  - Jordan "serves" 10 million people.
  - Bitcoin serves? 106M accounts but only 1M active users
    - < https://techcrunch.com/2021/03/21/the-debate-about-cryptocurrency-and-energy-consumption/>

What sort of people and institutions gain special economic and political power from this new technology?

- If we focus on the short-term, we'd identify only early adopters with high-end tech skills. They accrue the advantages from/of "what it's good for."
- But long-term, we'd have to figure that something this complex AND useful to enterprises with ENORMOUS amounts of content to keep track of means
- that the Googles, Microsofts, Amazons, auto companies, financial institutions and medical institutions will probably find the best use-cases and be able to develop at scale.
- Doesn't everyone want to evade taxes? Anonymous financial transactions could ramp up tax evasion by participants of all sizes.

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- On the plus side, let's not forget or rule out the fact that the Internet behemoths have brought about many benefits to users. If Blockchain-tech makes transactions more stable, trust-worthy, and efficient, AND the resultant improvements and savings are passed on to citizens in general, LOADS OF PEOPLE WOULD GAIN ECONOMIC BENEFITS.
- And just as was the case the the early Internet (and as COULD be the case now, but seldom is), blockchain-tech COULD BE used for political action that promotes justice, equality, and political participation.

What sort of people and institutions gain special economic and political power from this new technology?

- **Private Securities: It is now theoretically possible for companies to directly issue the shares via the blockchain rather than through a traditional stock exchange.**
  - **Of course the SEC might not like all of those.**
  - **Some blockchain-based securities exchanges already exist.**
- **Insurance: Assets which can be uniquely identified by one or more identifiers which are difficult to destroy or replicate can be registered in blockchain. This can be used to verify ownership of an asset and also trace the transaction history.**
  - **Will insurance companies pass along savings from efficiencies to customers?**
- **Blockchain tech needs a significant amount of software/application/architecture development in order to make it work for the masses. Maybe one for you and your friends.**

Q&A? Blockchain:

Time allowing, articles in the syllabus

Blockchain:
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- **"Art and Blockchain"**
  - **These developments raise important questions of governance of a technology which requires expertise in cryptography, coding, and securities law for implementation. Ultimately, blockchain holds the potential to tip the role of the arts toward democratic availability through collective ownership structures or toward further commodification of cultural assets**
- **First, blockchain blurs the for-profit/nonprofit distinction in the arts because the decentralized structure shifts responsibility for infrastructure away from trusted central authorities. Private blockchain start-ups are recreating title registries that have to date been managed by the public sector, as well as managing provenance and authenticity research currently done by museums, foundations, and galleries.**

“Art and Blockchain”

- **Secondly, blockchain changes the ownership structure of art by creating fractional ownership of artworks and scarcity for digital works. A great deal of variety exists within this area, with some companies focusing on collectors and others focusing on artists. These potential shared-value structures extend to resale royalties and copyright (Whitaker).**
- **Third, blockchain’s shared value structures generalize to new models of supporting the arts itself, including Michael Wilkerson’s proposal for a true endowment for the National Endowment of the Arts and Margo Jones’s proposal that theaters could become stock companies (Ragsdale) These innovative cooperative financial arrangements could extend to community economic development funding, cultural festivals, and many other areas of arts management and policy design.**

A technology based on not trusting a central authority also raises fundamental questions of governance. As Lawrence Lessig wrote in 1999, computer code is law. The question that follows is how much do we need to understand blockchain, coding, cryptography, or securities law to participate

"Blockchain: Background and Policy Issues"

- **Data Portability**
  - **As with other record keeping systems, once data is logged in one system, transferring that data to a new system may be problematic.**
- **Ill-Defined Requirements**
  - **Just too early to effectively assess all the potential +/-**
- **Key Security**
  - **As with other forms of encryption, the creation, storage, and loss of control of the private key creates problems.**
- **User Collusion and Control**
  - **Groups of users on the blockchain may combine computing resources and collude to mine blocks. In some blockchain implementations this is allowed and encouraged. However, it does present a situation where groups of users may wield unintended influence over which transactions make it into a block, and the blocks that are posted. Additionally, a user, or group of users (the attacker) with sufficient computational power may be able to recreate the blockchain, thereby altering previous transactions and broadcasting to blockchain users that the attacker's chain is valid.**
- **User Savviness and Safety**
  - **As blockchain technology is developed, adopted, and used, similar design requirements or standards may be necessary to ensure proper use and safe adoption of the technology.**

“There's No Good Reason to Trust Blockchain Technology”

- **Blockchain solutions are frequently much worse than the systems they replace**
- **Private blockchains are completely uninteresting. . . In general, they have some external limitation on who can interact with the blockchain and its features. These are not anything new; they’re distributed append-only data structures with a list of individuals authorized to add to it. Consensus protocols have been studied in distributed systems for more than 60 years. Append-only data structures have been similarly well covered. They’re blockchains in name only, and—as far as I can tell—the only reason to operate one is to ride on the blockchain hype.**
- **The question is: Is it actually good for anything? It's all a matter of trust.**
- **What blockchain does is shift some of the trust in people and institutions to trust in technology. You need to trust the cryptography, the protocols, the software, the computers and the network. And you need to trust them absolutely, because they’re often single points of failure.**
- **Any blockchain system will have to coexist with other, more conventional systems.**

“There's No Good Reason to Trust Blockchain Technology”

- To answer the question of whether the blockchain is needed, ask yourself: Does the blockchain change the system of trust in any meaningful way, or just shift it around? Does it just try to replace trust with verification? Does it strengthen existing trust relationships, or try to go against them? How can trust be abused in the new system, and is this better or worse than the potential abuses in the old system? And lastly: What would your system look like if you didn’t use blockchain at all?
- If you ask yourself those questions, it's likely you'll choose solutions that don't use public blockchain. And that'll be a good thing—especially when the hype dissipates.