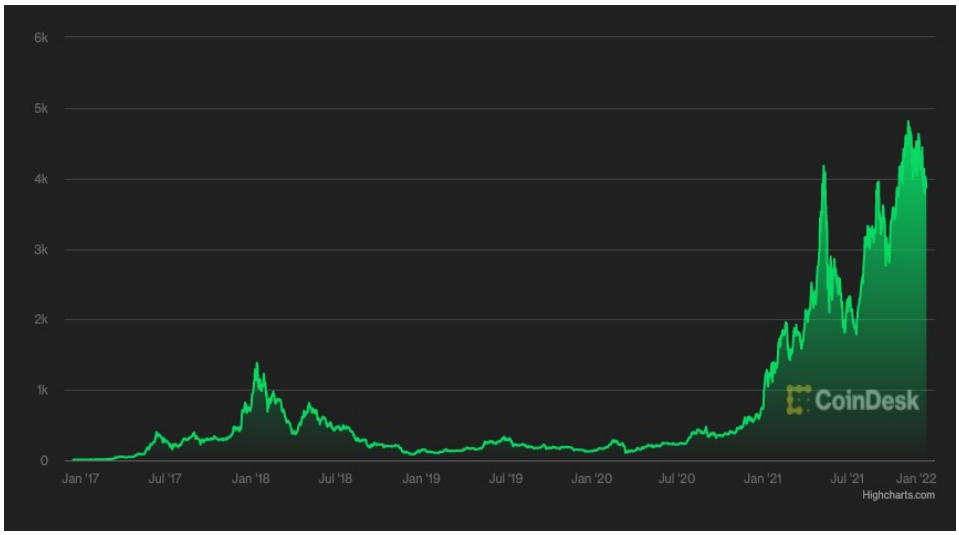
NFT Problems
by Paul Slocum (rev 0.892)

Prior to this year, the general public's association with cryptocurrency was with things like the Silk Road drug market, ransomware attacks, sketchy investments, nerds playing with fake money. That started to change in February when Elon Musk announced his investment of $1.5b in Bitcoin. To some this still was nerds with video game money, but then the following month the record breaking $69m Beeple sale at Christie's became worldwide news, and since then a large swath of the art world has engaged with NFTs and crypto from artists to galleries to publications to museums, giving cryptocurrency legitimacy and a sense of cultural sophistication. Crypto traders who were previously speculating on the thousands of available crypto coins could now switch to NFTs and designate themselves curators and collectors. There's a significant amount of money and power involved, so I wanted to take a closer look at this technology that the art world and others are backing.



Ethereum trade value over the last 5 years

Cryptocurrencies that use blockchain technology are at the core of all these related concepts like NFTs, "Web 3", and DAOs. Both the art world and the software world have divided opinions about crypto, but most people agree that blockchain technology is amazing for marketing. Blockchain explanations read like science fiction that's real, and it's a compelling read that a lay person can understand reasonably well on a high level. People are drawn in by the sense of intricate unbreakable security, redundancy, and community action.

However while the claims about blockchain technology itself are true, the actual marketing you see often conflates different contexts such that the claims are no longer quite accurate. And once a person has taken the time to try to understand the blockchain, cryptocurrency, NFTs, and who this Beeple guy is, it's so much information overload that it's easy to miss the subtle logical problems and political implications hidden within. Some of the marketing is quite aggressive too, like how "Web 3" is falsely conveying the idea that it arrived from some consensus in the software industry when it's primarily just a marketing term from the crypto industry.

In this essay I break down various marketing claims and practical functions of crypto and NFTs to examine where they succeed or fail.

Art Authentication and Decentralization

Suppose somebody downloads an artist's work off their portfolio page and sells forgery NFTs. Then later, the artist makes and sells legitimate versions of those NFTs. Using only the blockchain, how do you know which one is authentic? The blockchain in fact has no way to know this for sure without referring to some outside trusted service that has authenticated the artist and artworks. Artwork is stolen and sold as NFTs all the time, and artists are starting to realize that there needs to be a centralized service that validates artists and artworks. Otherwise there is no way to authenticate art even with the blockchain's security and consistency. And once you need a centralized authentication service, the system itself is no longer decentralized, and one could conceivably do art authentication more simply and efficiently without the blockchain at all.

Some might suggest that the solution to decentralized art authentication is some kind of code-driven decentralized organization with a voting system that authenticates the art. But what about when 4chan hacks the system, or when they brigade the voting to get their counterfeit accounts declared legitimate? Once the decentralized organization works out all these problems, it will arrive at essentially the same structure as what you'd expect of a normal centralized art authentication service.

The Sale of Digital Art

It's a common misconception that NFTs solve some technical or legal problem that makes it possible to sell digital art. But it's really intellectual property law that allows selling art editions with certificates, and artists have been selling digital editions for decades without a blockchain, often without artificial scarcity. Many digital editions are online for everyone to see. NFTs primarily just solve a marketing problem.

But NFTs also introduce a new problem, which is that everything is public record and many of the most dedicated and thoughtful art collectors are very private. Even if a collector doesn't identify themselves, in many cases it would be easy to figure out who they are by examining ownership records.

It's also worth noting that NFTs are not required to sell art with a resale royalties contract. However as an aside, I've been selling digital and physical art for 15 years, and I'm only aware of one artwork that's actually changed hands, which would have resulted in a relatively small amount for that one artist if I'd implemented those type of contracts. You really can only make resale money in the near term if work is flipped frequently, which is not generally desirable. And even in the long term it's often only artists who are already successful that truly benefit from resale royalties. I'm not against resale royalties, but I think they're overstated as a reliable solution to support artists.

Storage and Digital Art Conservation

It's another common misconception that the blockchain is able to store an artwork's media files in addition to the ownership registry, but this is not practical because it's extremely cost prohibitive to store data on the blockchain unless the data is very tiny. Most NFTs only contain a link to the artwork media that is stored elsewhere. There are some artists who make artwork stored directly on the blockchain, but since that can only work for niche artworks that have a tiny amount of data, it's not practical as a general solution for digital art storage. There are other technologies like IPFS that are commonly used for NFT storage, but that's more like BitTorrent and does not use blockchain technology.

The other problem for conservation is the blockchain itself. The time scale of art ownership and digital conservation is long, and it's very uncertain that any particular blockchain is going to still be around in a few decades. Blockchain data will probably be migrated and archived somehow, but it's unlikely there will still be a running blockchain that's accessible as before with the same software. At best, the blockchain certificate will require ongoing maintenance to maintain access and functionality. Part of the reason the blockchain may need to be preserved or emulated is for cases where the artwork interacts with the blockchain data. But more importantly, since the data on the blockchain is legally tied to ownership of the edition, the unknown lifespan of a blockchain introduces some complicated questions about how the work may be sold far in the future and how blockchain preservation functions in a legal sense.

As absurd as it may sound in the NFT age, I still believe the best solution is archival paper certificates with a central database, because a good paper certificate can last over a century. And it can be replaced with digital documentation or some other placeholder when the paper certificate eventually disintegrates. With collectors who are buying for the long haul, a rapid digital art trading system just isn't that important, and none of the serious, long-term digital art collectors I know are interested in NFTs. If a collector's paper certificate is lost or stolen, then I invalidate the old certificate in my database and mail the collector a new one. I hope to eventually pass off my database to an archive or an organization who can maintain it long-term. But if that doesn't happen and I die, then all the collectors still have the original maintenance-free physical certificates, records of purchase, and correspondence to prove ownership the Antiques Roadshow way. I've also considered switching to using thin, engraved steel plates for certificates since they last longer and are more robust.

Compatibility with Museum Collections

Buying a movie on DVD doesn't mean you can publicly screen it, because copyright law reserves the right to public performance for the copyright holder. This is enforced strictly by the film and music industries. Because of this, digital artwork certificates should give explicit permission for public exhibition in order to be fully legally compatible with museum collections, because otherwise the museum might not be able to exhibit a purchased work until copyright expires if the artist happens to be pedantic about copyright laws or just wants to prevent the work from being shown.

Even though NFT artworks are "public" in a way, browser windows are hardly ever for any kind of public display. So although there may be some ways a museum could argue their case if sued, the outcome of a court case about performance rights of digital art is unpredictable, and permission is needed to fully avoid legal risk.

Related to the previous discussion about preservation of the blockchain, professional NFT certificates should also account for the obsolescence of the blockchain, and the certificate should ideally specify some way that ownership can be conferred if the blockchain no longer exists.

The potential incompatibilities with museum collections discussed here can be fixed by improving NFT certificates, but it is a problem for many existing NFTs based on the artist certificates that I've examined. Some generative digital trading card projects like Bored Ape Yacht Club do confer more rights, but that's a special situation made possible by their generative nature, and most artists are understandably not going to want to sell full copyright of their singular artworks.

Security

Blockchain database security itself is secure; however the problem is that the way blockchain security is marketed creates a sense of overconfidence with developers and users. This year there were billions stolen, and nearly two crypto thefts per month each totaling over $10m. Developers and users who are relatively inexperienced with security rely too much on the blockchain without realizing that there are many layers and facets of security of which the core database is only a small part.

Recently somebody was tortured in their home by criminals to get their cryptocurrency. Previously there generally wasn't a good way for somebody to force a wealthy person to instantly transfer millions of dollars internationally in a way that's almost impossible to trace or reverse. Once crypto gets its act together in terms of security and consumer protection, those frictionless payments probably won't be quite as frictionless anymore, and the blockchain will only be a relatively small part of the entire security system.

The Environment

I think the severity of the energy usage problem is debatable and complex. But something concerning about the crypto community is that I see evidence there's just not much concern for the environment in general. Improvements in energy usage could be made, but progress seems to be overpowered or at least slowed by financial interests. You can see this in the slow move to more efficient proof-of-stake blockchains.

But I've also seen this pattern elsewhere, like how Ethereum NFT marketplaces could have saved a massive amount of energy and artists' money just by allowing works to be listed for sale without minting it on the blockchain ("lazy minting"). Implementation is relatively straightforward and simple, and there's no reason lazy minting couldn't have been offered since the beginning. I see people requesting this feature from NFT platforms on social media, but they don't typically get a response. As a result, many artists now unnecessarily have a significant amount of money tied up in crypto that they are not likely to get back. I find posts on forums by artists in this situation who spent all their money on minting costs but are now unable to sell anything.

Financial Deregulation

Video games and banks have been accomplishing the same kinds of digital transactions for decades without using blockchain technology. Game economies had enough real world value that World of Warcraft gold mining farm operations appeared in China the mid 2000s.

Compared to traditional databases, what's unique to blockchain technology is that it doesn't require a central authority. This mechanism is fascinating, but many of the claims about the advantages of blockchain databases over traditional databases are vague or unfounded. However, blockchain's one huge unique effect is that it creates a liquid asset class that evades regulation by the Securities and Exchange Commission and FDIC, because it's a new type of distributed, autonomous, international machine with no central authority or admin password. Despite some transaction information being exposed on blockchains, there are now ways to hide your trail, and blockchain technology's international nature makes it easy and quick to use services and exchanges based in countries that have less regulation. At best, the SEC and FDIC will have limited effective oversight and will take a while to get any regulations established. If the they go too far with restrictive regulations, then there's a good chance the case will end up at the current Supreme Court.

The SEC and FDIC were created in response to the crash of 1929 to avoid market manipulation, speculation, fraud, and other issues that led to events like the Great Depression. They try but do not always succeed at preventing disasters like Enron, the 2008 financial crisis, and Bernie Madoff. Arguably one of the most significant accomplishments of Occupy movement was the 325 page letter produced containing recommendations of stricter banking regulations to the FDIC which was cited over 200 times in the actual FDIC ruling.

Cryptocurrency has the opposite effect, creating a financial market that's largely out of reach of SEC and FDIC regulation. Even if you're a libertarian and a fully deregulated "buyer beware" financial market fits your politics, cryptocurrency is still a problem because it doesn't fit the politics of other countries like China, where crypto is now banned. There may be ways to illegally work with crypto in China. But in 2020, Chinese Alibaba billionaire Jack Ma made a speech promoting financial deregulation in China and then disappeared for 3 months while the government brought the regulatory hammer down on his companies, and later he quietly reappeared without ever discussing what happened. Going around financial regulation in China may be risky regardless of money or status.

To be clear, crypto transactions being banned in China (about 20% of worldwide internet users) means you can't legally buy or sell NFTs and you can't use the primary features of "Web 3". This might be acceptable to some people in the context of cutthroat business or economic warfare, but it's at odds with some of the idealistic notions being marketed around NFTs, Web 3, and DAOs. A professional universal art registry that can't legally include artists or collectors in China is a problem.

This new deregulated market of cryptocurrencies makes possible frictionless worldwide (except China) payments and things like 1-minute loans at the expense of an increase in energy usage, and a market with increased crime, fraud, pump and dump scams, and businesses that evade gambling laws.

But is crypto trading really gambling and some kind of Ponzi scheme or fraud? Can it be both? Cryptocurrency as a whole functions similarly to a Ponzi scheme where recruiting more people into the system makes it seem like everyone's making money. And there are very strong indications that if major players cashed out, it would cause a crash and cash-out rush where only a relatively small percentage of investors would actually get compensated, leaving a lot of people holding an empty bag. Many people agree that this risk is one of the primary reasons that participation in systems like this is unethical.

The difference between crypto and regular Ponzi-like schemes is that this is a programmable Ponzi scheme letting people run businesses within the system under limited SEC oversight. A scheme like this will gradually stop making money as an investment when new people eventually stop buying into the system, and typically the market will crash when it stops being productive. But in this case there is motivation for the top players to keep maintaining the system and avoid pulling out since crypto allows people to operate other things within the system, like other Ponzi schemes and unregulated businesses. Many in the space are actually just regular businesses that want to operate within an ultimate libertarian fantasy, but others are businesses that are various hybrids of gambling and scams, and their presence makes it harder to differentiate a good business from a scam business. But even though cryptocurrency has this "utility" of operating with limited SEC oversight, the market still always has the potential to crash and wipe out a lot of people's money if major players lose confidence. One report shows that 64% of people investing in crypto in 2021 used credit.

Keep in mind that traditional art collecting frowns upon "flipping" artworks (selling after a short time of ownership) because ideally you want artworks to go to collectors who will live with work and who are building serious collections that may someday end up in a museums or archives. But with NFTs, flipping is

not only acceptable, but the frequency and prevalence of flipping in the NFT world is on a completely different level. And when you reduce friction, time-compress, and raise the stakes on art trading to where it will inevitably have the same dopamine responses as something like sports betting, then it's not really the same game anymore. The chairman of the SEC, Gary Gensler, agrees and has compared crypto schemes to unlicensed gambling: “We’ve got a lot of casinos here in the Wild West”

Crypto's deregulated market also makes it conducive to crime. Enthusiasts of crypto often dismiss mentions of crime, but I believe this is partly because the crypto industry has been providing misleading information. When I was search online for information about cryptocurrencies and crime, I notice that reports and articles are mostly taking data from the same few companies in the crypto industry who stand to benefit from reports indicating low crime rates. One of the most commonly cited crime reports is from Chainalysis, but if you look at their actual report, the methods are primitive, and they state in the report that the given crime rate should be considered a "lower bounds", because it's only based on how much crime they can find with no real holistic analysis. A deeper academic crypto crime study from 2017 that was not connected to the crypto industry estimated total annual crime-related transactions at $76b, whereas the same year Chainalysis reported only $8b. And even though Chainalysis claims crypto usage has doubled recently, they estimate a significant decrease in crime for 2020 without any explanation of why crime might be declining. One likely explanation is just that criminals are getting better at hiding their tracks, but this is not addressed in the report. A detailed analysis of cryptocurrency crime is beyond the scope of this essay, but keep in mind that some of the reports of low crime in crypto may not be what they seem.

Art's Relationship to Crypto

The crypto industry is ridiculously complex, and it's not easy for an artist, curator, or institution to determine their true relationship within it and what effect that has.

I see that artists and people in the art world are genuinely concerned about the energy usage issues and the hyper-commercialization of the NFT market, and many were wary of a market going from almost nothing to astounding prices and popularity overnight. But then people understandably came away with differing opinions on the energy usage issues depending on which materials were read and how they weighed everything out. Energy became a divisive issue that may have obscured some of the deeper problems with crypto and NFTs, like its functional issues and political implications. A lot of the strongest and most vocal criticisms of crypto products are coming from the software developer community and economists, and I noticed that until recently this wider criticism was a bit isolated from the art community.

I don't participate in NFTs, but I didn't write this to call out people who have. I just wanted to share some perspectives I wasn't seeing in the art and NFT space about this system in which the art world is now deeply involved.

It's worth noting that before NFTs, many digital artists were originally drawn to digital art specifically because it was non-commercial, and many of those artists will probably never engage with NFTs even if blockchain authentication continues to be popular. Plus, a large portion of digital art just doesn't fit well into the NFT market or format, and I've already noticed how the proliferation of NFTs is starting to narrow the vision of what people consider digital art to be. I hope curators and writers will continue to remind people that the artwork people currently associate with "NFTs" is only one of many interesting kinds of digital and technological art.

Further Reading

[note: I'm still deciding which articles to include and in what order...]

The Case Against Cryptocurrency:
https://www.watershed.co.uk/studio/news/2021/12/03/case-against-crypto

Robert Reich on NFTs and Congress:
https://robertreich.substack.com/p/crypto

Slate article about Stablecoin risk with SEC chairman talking about gambling:
https://slate.com/technology/2021/10/tether-crypto-danger-ben-mckenzie.html

Artists are Not Making Money Off NFTs:
https://thatkimparker.medium.com/most-artists-are-not-making-money-off-nfts-and-here-are-some-graphs-to-prove-it-c65718d4a1b8

60% of people investing in crypto borrowed money to do so:
https://www.kisbridgingloans.co.uk/finance-news/cryptocurrency-consumer-research-and-data-autumn-2021/

Why DAOs don't solve any problem:
https://world.hey.com/marin/daos-and-the-nature-of-human-collaboration-be162918

Web 3 is BS:
https://www.stephendiehl.com/blog/web3-bullshit.html

VICE coverage of NFT thefts (1.2 billion):
https://twitter.com/lorenzofb/status/1470497116862754826

Stolen money as a result of inexperienced developers in crypto:
https://www.nbcnews.com/tech/security/bitcoin-crypto-exchange-hacks-little-anyone-can-do-rcna7870