ETH, The World's Most Valuable Asset

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Competition paints the world around us, at every level, from who can get to Mars first to who sold the most dental insurance last month. Ironically, the best way to win in a hyper-competitive world is to own a monopoly, to avoid any competition at all. How do you make a monopoly? The first step is to offer a product that is significantly better than the status quo. To create something that people love. The second step is to scale that product in such a way that the monopoly persists despite free markets allowing competitors to enter and ruthlessly compete [1]. To maintain a monopoly that will persist as long as possible [2].

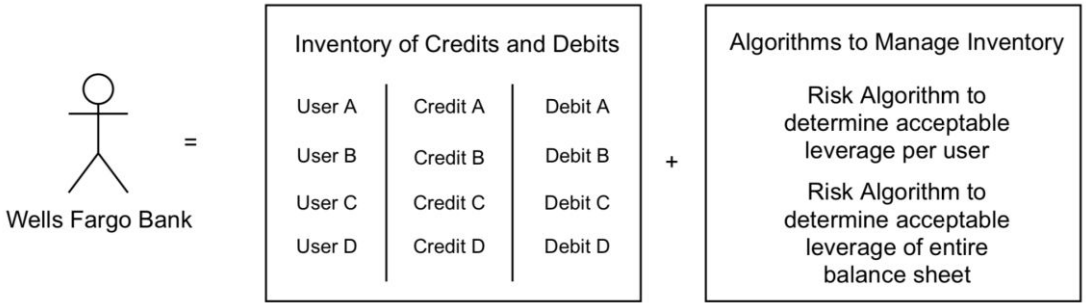
ETH has developed two distinct monopolies, both fueled by moats that have individually created the most valuable equity and monetary assets [3]. These two monopolies, Ethereum the technology and Ether the money, will cause ETH to become the most valuable asset in human history.

Ethereum the Technology

Step 1: Make a product significantly better than the status quo.

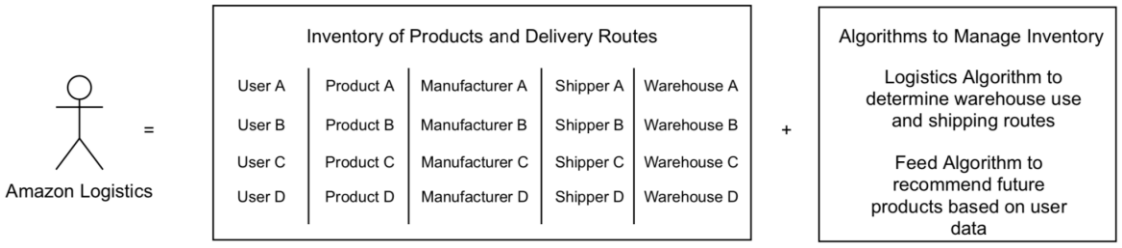
Every digital middleman, from Wells Fargo to Amazon to Facebook, is a database of inventory with a bunch of algorithms to help manage that inventory. The assets that compose each middleman's inventory inherently depends on that middleman's product, but all of them are primarily third-party asset managers:

- Every finance company manages users' credits and debits for some type of asset (Commercial banks, payment processors, and payment APIs combine to manage the credits and debits of users' fiat currencies; depository institutions, stock exchanges, and retail trading apps manage users' equities and bonds; etc.). They use algorithms to make sure each account and the system as a whole remains solvent.

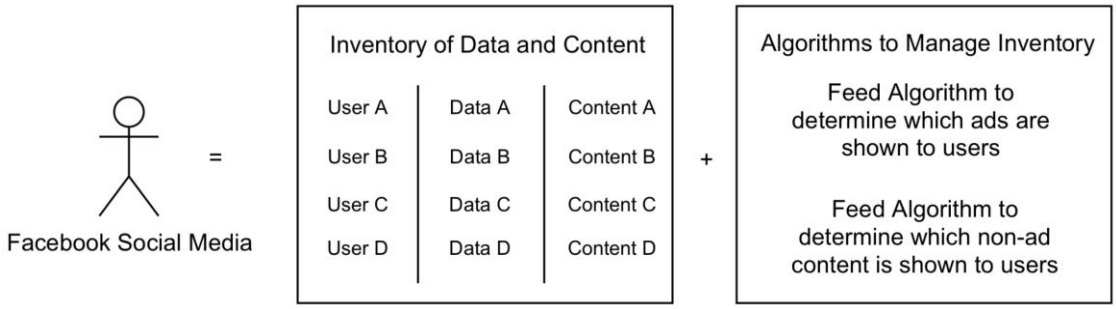


- Every e-commerce company manages products and the best possible delivery route to get that product to the user (The best possible delivery route may include multiple assets, referenced below.). E-commerce companies use feed algorithms to convince their users to purchase products, pricing algorithms to determine what they can charge

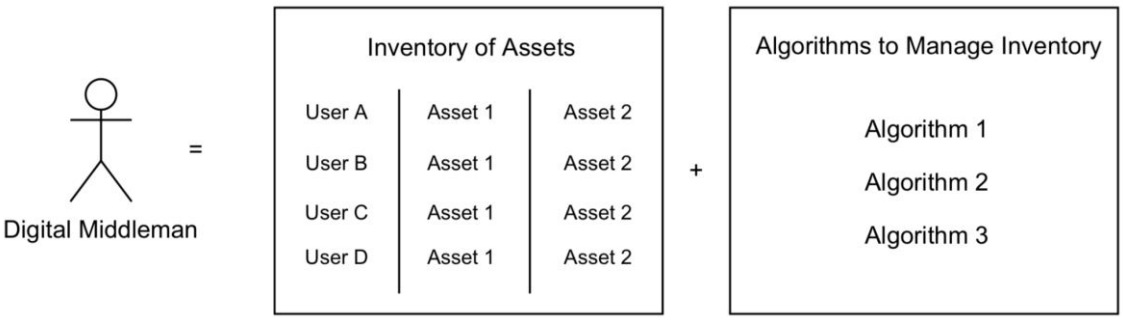
the user, and logistics algorithms to deliver products to users as fastly and cheaply as possible.



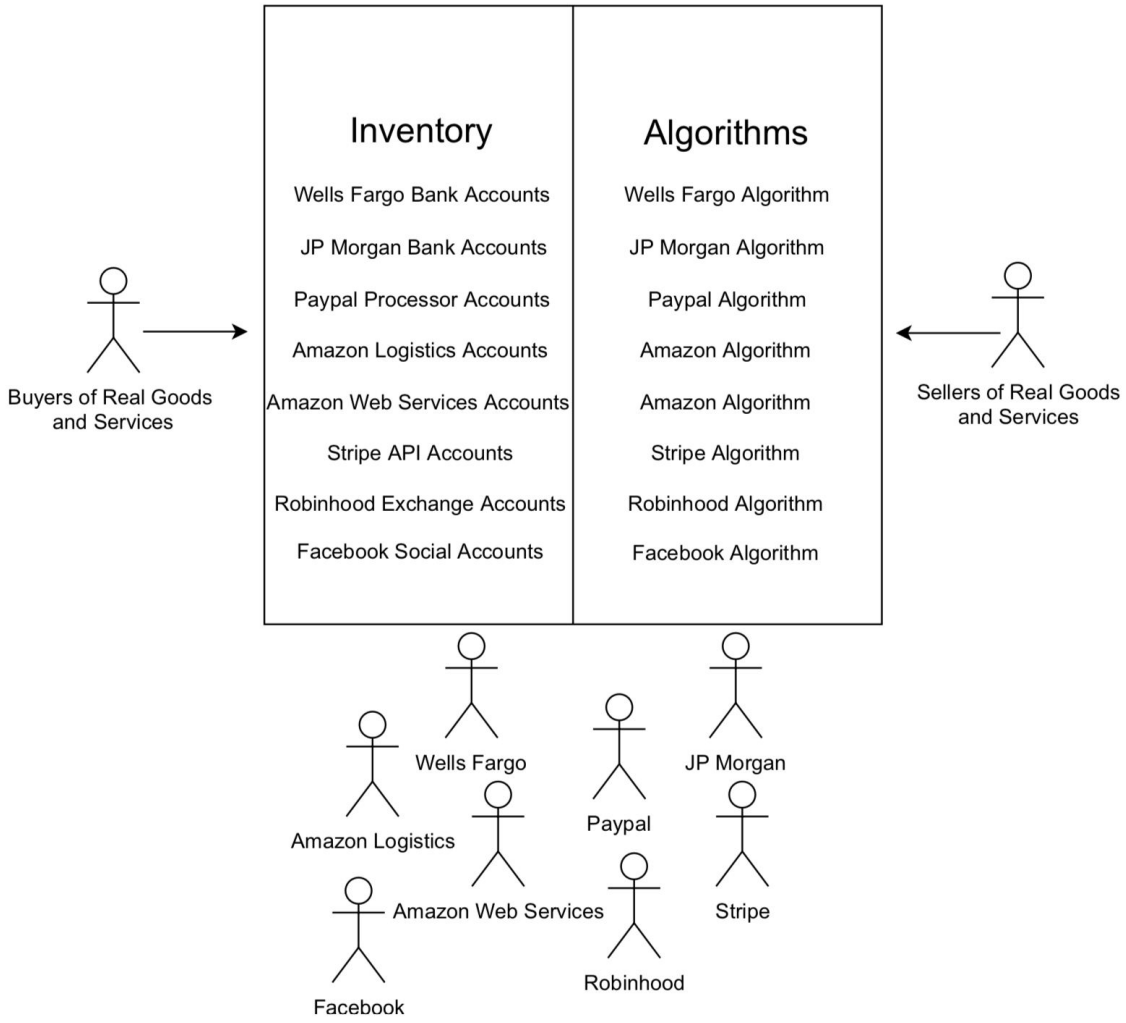
- Every media company manages users' data and content. They use feed algorithms to generate content for users, feed algorithms to generate ads for users, and payment algorithms to charge for ads.



Each of these subcases can be generalized into one diagram, as all digital middlemen, from finance to e-commerce to media, perform the same high-level service.



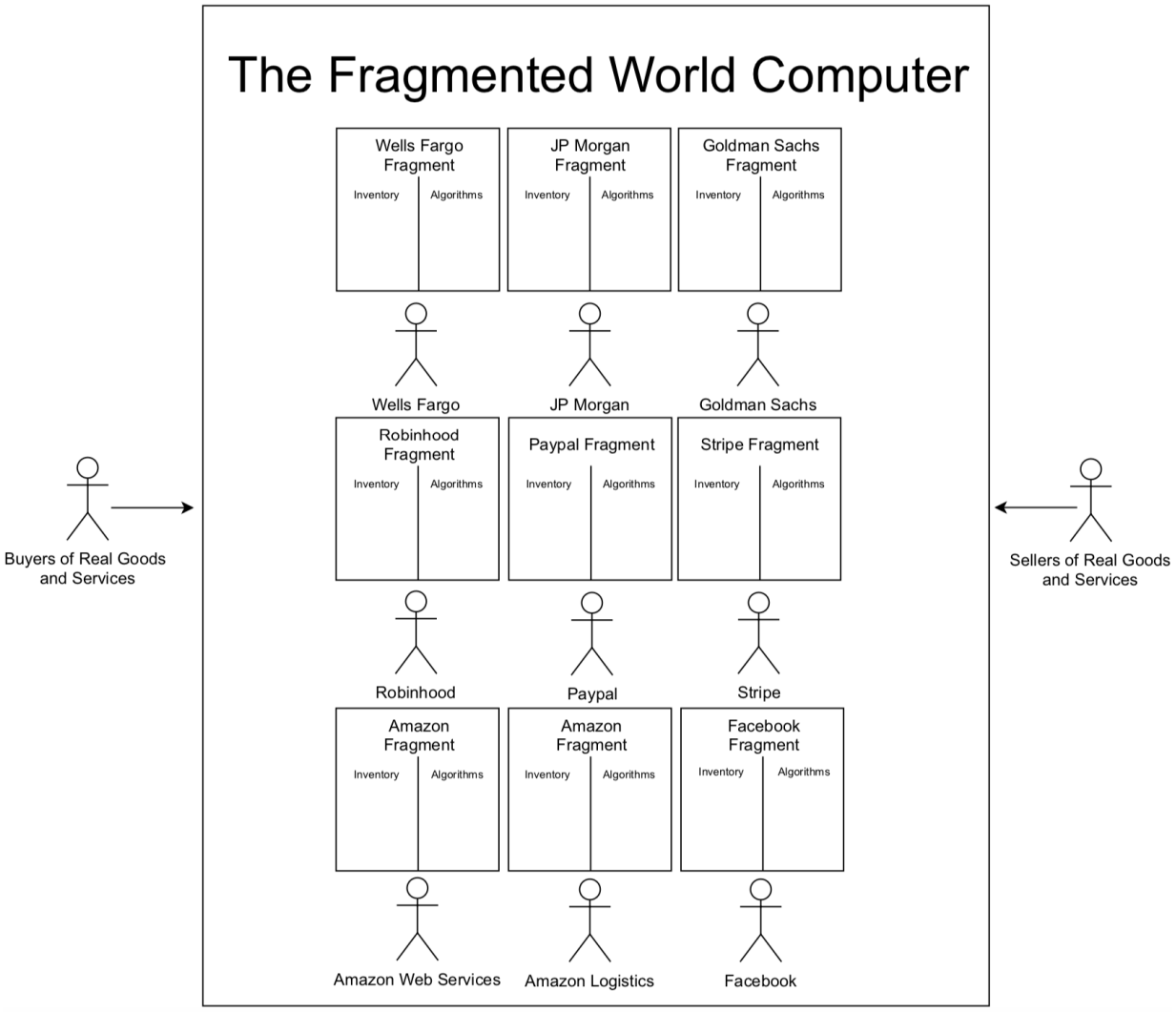
Together, these digital middlemen form the 2020 version of the world computer.



The purpose of the world computer is simple: to optimally organize buyers and sellers of assets. Those assets could be financial (in the case of banks like Wells Fargo), physically consumable (in the case of e-commerce companies like Amazon), or digitally consumable (in the case of media companies like Facebook). However, the world computer in its current state is far from efficient, primarily because it isn't one computer. It's actually a bunch of fragmented computers, one per internet middleman. A fragmented world computer carries with it numerous inefficiencies:

- High cost of interoperability: to transact between each fragment, digital middlemen often need even more middlemen to establish trust, each incurring a fee. These middlemen include transaction processors, such as Visa or Paypal, and APIs, such as Stripe or Plaid.
- High cost of exit: to exit one's assets from one fragment to another can be time consuming or impossible. Examples of this range from transferring assets between stock brokerage accounts or transferring social graphs between social media companies. In some instances, the fragments maintain more control over users' assets than the users themselves.

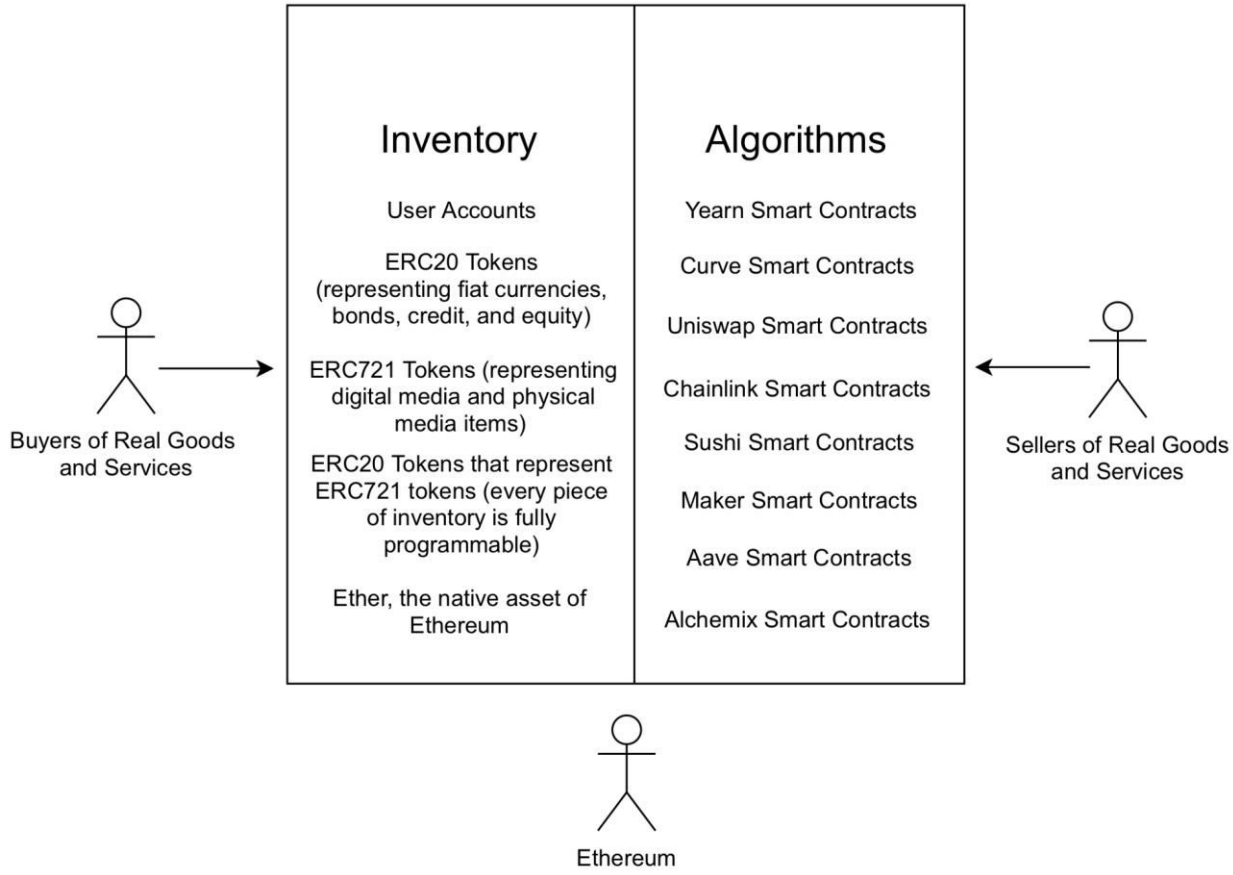
- Both of these factors create a third, cumulatively more powerful phenomenon: a lack of competition. Because it is difficult for users to exit platforms (high cost of exit), and because building a new fragment requires starting from scratch (high cost of interoperability), existing fragments extract margins much higher than what the economic equilibrium would be in a perfectly competitive world computer.



The New, Improved World Computer

Ethereum the technology is the world computer. Just like the current world computer, Ethereum is an inventory of assets with a bunch of algorithms to manage that inventory as efficiently as possible. Ethereum's inventory is still growing (albeit at a crazy rate), but will eventually include every physical and digital asset class currently on the internet, as well as new asset classes that the old system's fragmentation failed to imagine. The only difference is that instead of the assets being held by a middleman, they are held by Ethereum, and so have slightly different terminology:

- User accounts became represented by public keys, instead of email addresses. Public keys allow users to own their assets directly, thus always providing them with a means of exit from any middleman built on Ethereum. That said, services do already exist to obscure public keys with email addresses, to provide the same user experience as the old world computer.
- Assets became tokens. For the most part, financial assets became ERC20 tokens, and e-commerce and media assets became ERC721 tokens. Because Ethereum is unfragmented, every token is allowed to interact with every algorithm at no additional cost.
- Algorithms became smart contracts. Because Ethereum is unfragmented, every smart contract is allowed to interact with every other smart contract at no additional cost [4].



Because tokens and smart contracts on the new world computer can interact with each other at nearly zero additional cost (the only cost is a free market fee paid to Ethereum validators), innovation on the new world computer compounds incredibly quickly.

Some developers globally have built applications in a day that previously took the fragments of the old computer years to create; others have created products that still don't exist on the fragmented world computer, even decades later [5]. The best of Ethereum's products, all of which are simply a combination of tokens and algorithms, have grown from zero to billions of

assets under management (AUM) in matters of months, metrics unheard of on the old world computer.

To build, all a developer needs is internet access. No more Wells Fargo, Amazon, or Facebook to ask for permission to create new products. The interoperability problem of the old world computer is solved. To exit, all a user needs is a public key, easily creatable via any digital wallet (of which there are thousands). The ability for anyone to build and exit at near zero cost has rendered Ethereum into a hyper-competitive world computer.

Because Ethereum is hyper-competitive, it is hyper-efficient. Thus, the efficiency gains for buyers and sellers of goods, those who actually determine what is bought and sold on the internet, are massive. The cost to scale Ethereum is only a small fraction of the efficiency gains for the buyers and sellers of goods and services, which means that Ethereum will scale [6] [7]. It just takes time, but time always wins. Eventually anyone and everyone will be able to transact more quickly, cheaply, securely, and globally using the new world computer. They'll even have access to new products that would have taken years to build on the old version of the world computer. No longer can digital middlemen have margins that make every other industry jealous. All of their monopolies or oligopolies are disrupted simultaneously. A win for all besides the old world computer's middlemen.

Step 2: Scale that product in such a way that the monopoly persists despite free markets allowing competitors to enter and compete.

Ethereum has two mutually compounding network effects that have already created an insurmountable moat for competing world computers: liquidity and developer tooling. Past internet technology winners only boasted one of these moats, at best.

Liquidity begets liquidity

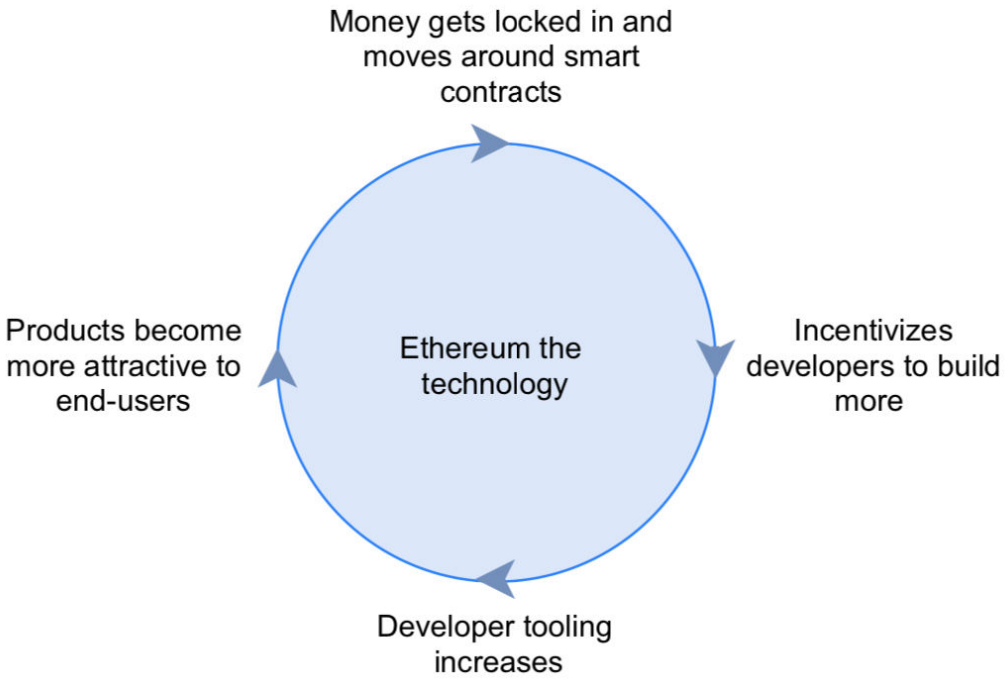
Every asset brought onto Ethereum makes it more valuable for additional assets to enter. Finance as a sector is composed of primitives, individual use cases that become combined and refactored to create additional use cases. These primitives are investing, trading, paying, lending & borrowing, and insuring. Every finance primitive has liquidity-driven network effects, and every industry is underpinned by finance [8] (i.e. Every business receives payments, takes loans, issues equity/tokens, takes out insurance, etc.). The compounding of these individual primitive's network effects and their interconnection all under the Ethereum umbrella has rendered it impossible for any other blockchain to take any real amount of financial liquidity away from Ethereum, unless that competing blockchain can attract more high quality developers than Ethereum, which is impossible because of our second moat:

Developer tooling begets developer tooling

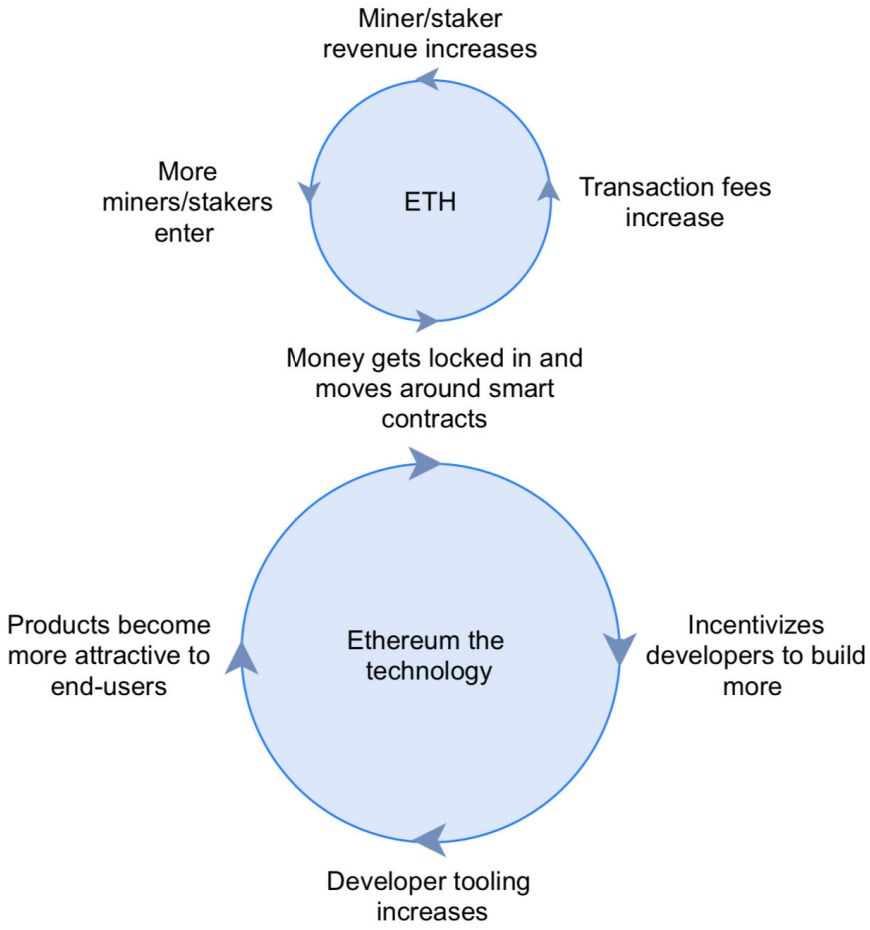
Due to its open-source and composable nature, every line of code ever written for a blockchain falls under the developer tooling category for that blockchain [9]. As more code is written on and for the Ethereum world computer, it becomes more valuable for new developers

to write new code for the Ethereum world computer, leveraging the code, specifically the smart contracts and testing environments, that already exist. Any attempt to launch a blockchain different than Ethereum would require the re-writing and re-auditing of all the smart contracts currently deployed on Ethereum. This is a ridiculous task at this point in time, with Ethereum already having seven compounding years of developer tooling. Developer tooling on Ethereum continues to grow at a faster rate than any competing blockchain's, while Ethereum already has the most developer adoption by over ten times any competitor.

The network effects of liquidity and developer tooling compound alongside each other: as more money is stored on Ethereum, the incentive to build on Ethereum becomes greater. This adds to improving developer tools, and ultimately increases the attractiveness of the consumer products on the Ethereum blockchain. Ultimately, this attracts more capital from more users, and the cycle continues.



The network effects of liquidity and developer tooling also lead to the compounding growth of another, perhaps the most important, feature of the system: security. Security in blockchain land is the resources put at stake to act as a miner/validator of that public blockchain. As Ethereum's security becomes resilient to attacks even from those by nation-states, the pitch to users to store funds and to developers to build new products becomes easier. The flywheels compound.



The network effects of liquidity and developer tooling, combined with a corresponding increase in security, has led to product offerings to end-users that no other blockchain can rival [10]. Ethereum is the only world computer.

Ether the Money

Ether the money, the native currency of Ethereum the world computer, provides us with our second monopoly, due to its significant improvements over the status quo in both supply and demand, combined with the network effects of money. The measurements of a money's success is most easily measured through its supply and demand:

- A money's supply is its current distribution (often measured via the Gini coefficient) and future distribution (i.e. its inflation rate).
- A money's demand is how much people want to use it for some purpose, either through some sort of consumption (i.e. conduct a payment) or some sort of investment (i.e. store wealth over time).

Ether improves significantly over gold, the world's current leading non-sovereign money, in both regards, and consequently will become the world's leading non-sovereign currency.

Step 1: Make a product significantly better than the status quo.

There are three types of assets: productive assets, consumable assets, and store of value assets.

- Productive assets are stocks, bonds, and capital goods (i.e. manufacturing equipment): owning them gives you the right to revenue streams or dividends.
- Consumable assets are cash, oil, and even customer rewards programs: owning them gives you the ability to procure a good or service.
- Store of value assets are precious metals, real estate (real estate is also a productive asset), and fine art: owning them allows you the right to something that must be scarce, regardless of the financial circumstances of governments or corporations.

Ether is the first store of value asset to also attract demand as a productive and consumable asset. The demand for Ether as a productive asset is derived from the ability to use Ether to earn all of the transaction fees paid for using Ethereum the world computer [11]. Thus, as the flywheels outlined in the 'Ethereum the technology' section grow, and Ethereum generates more revenue for its miners than any internet company by an extremely wide margin, the demand for Ether grows. This is unprecedented in non-sovereign commodities, and is already attracting investors that avoided gold because of its lack of productivity [12] [13].

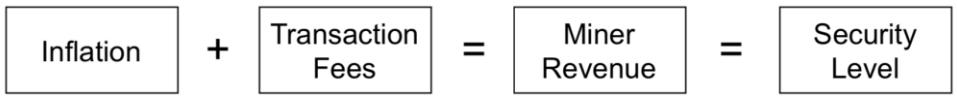
The demand for Ether as a consumable good also comes from Ethereum the world computer: every transaction or other smart contract execution on Ethereum, even those that have nothing to do with Ether, carry with it a free-market fee that must be paid in Ether [14]. Thus, as demand for Ethereum the technology grows, so too will its demand as a consumable good [15]. For this reason, those in crypto often refer to Ether as digital oil.

Due to its demand as a productive and consumable asset, Ether, at scale, becomes a better store of value (meaning it has a lower inflation rate) than gold. Ether will have a lower inflation rate than gold by Q1 2022 (shortly after it completes its transition to a Proof of Stake consensus algorithm, at which point mining becomes 99.5% more efficient than it is today).

Step 2: Scale that product in such a way that the monopoly persists despite free markets allowing competitors to enter and compete.

Demand Fuels Supply: Digital Oil Becomes Digital Gold

The purpose of inflation in any layer-one cryptocurrency is to pay miners for security. A blockchain's security budget, what it pays to miners, is its inflation + its transaction fees. Thus, as the transaction fees paid to Ethereum's miners grow (due to it being the world computer), Ether's inflation rate can afford to decrease, while still maintaining the same or higher levels of security.

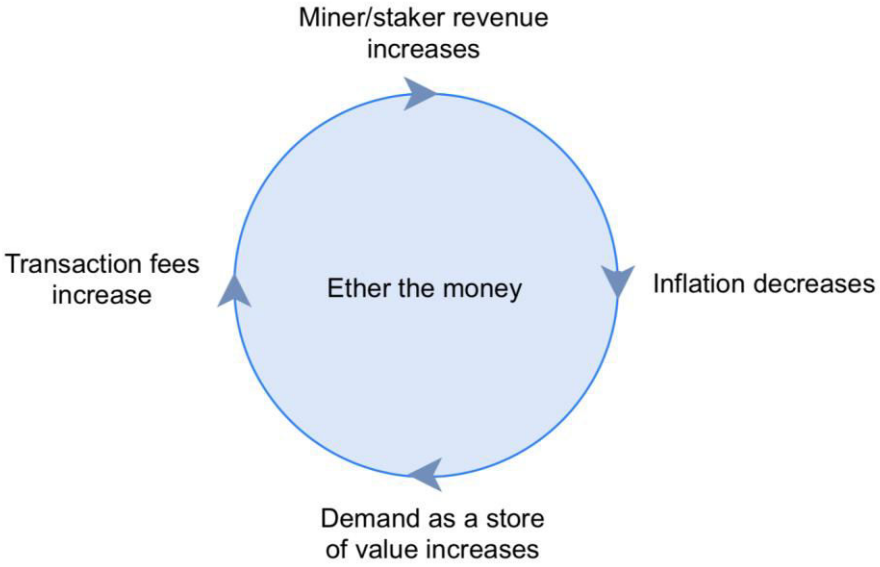


For example, if the revenue paid to miners is 100 Eth per year, 60 from inflation and 40 from transaction fees (the real ratio from July 1, 2020 to June 30, 2021 [16]), and then transaction fees doubled, inflation could be cut in half while security still increased by 10%.

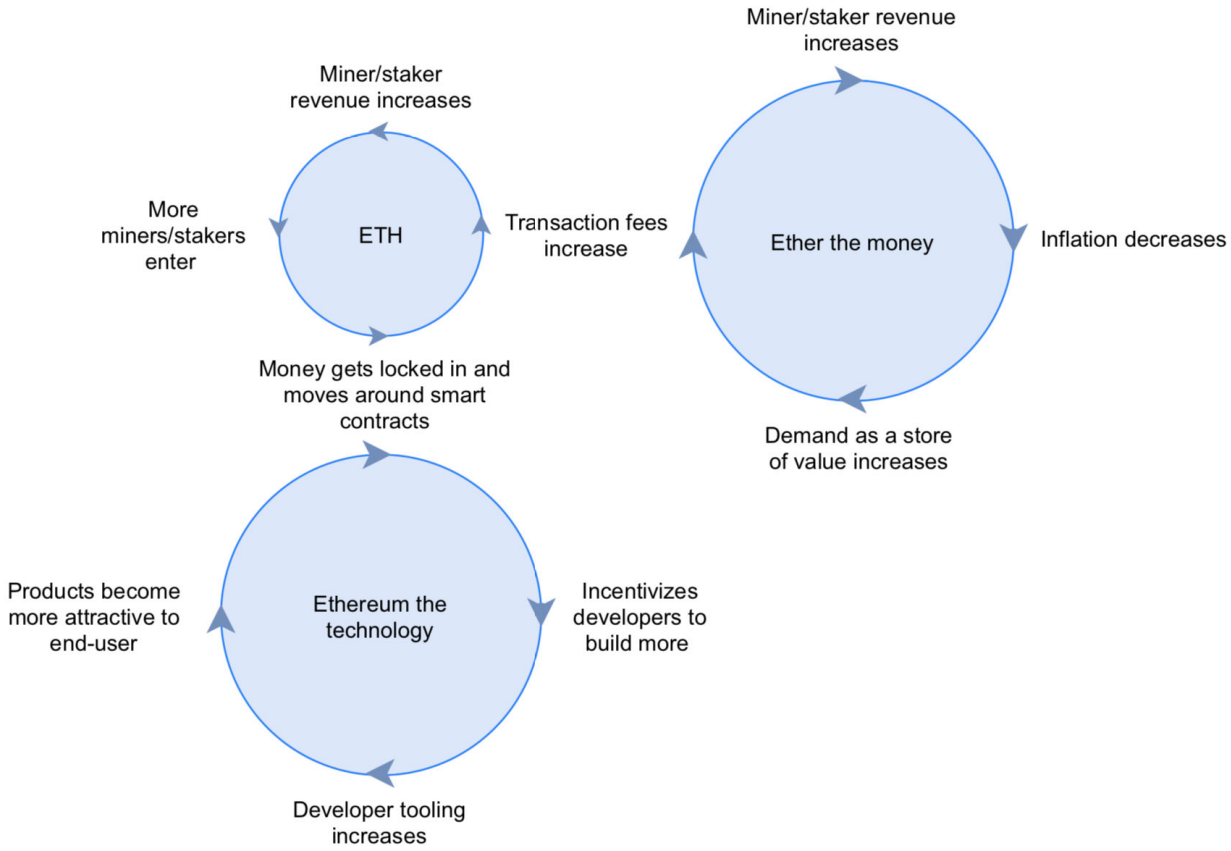
60 Eth	+	40 Eth	=	100 Eth	=	Security Level
30 Eth	+	80 Eth	=	110 Eth	=	Security Level

Because Ethereum will be the only world computer, its transaction fees will be magnitudes greater than any other world computer. Thus, Ether will have an inflation rate drastically lower than any competing digital currency [17].

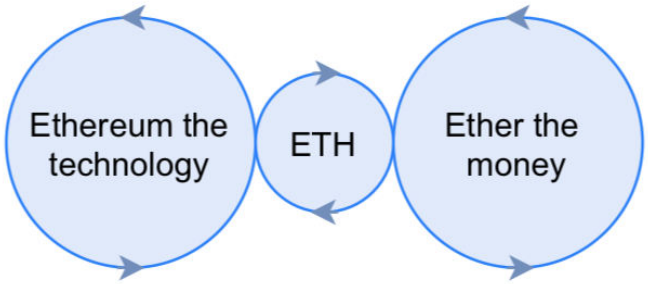
A decrease in inflation further drives demand for Ether as a non-sovereign store of value [18], which causes additional capital to enter the Ethereum world computer (via buying Ether). Additional capital entering the system causes transaction fees to grow, as that capital becomes stored and moved around Ethereum. Increased transaction fees cause inflation to decrease, and the flywheel continues.



Not only does additional capital entering the system increase transaction fees and thus decrease inflation, it also leads to better developer tooling, as outlined in the ‘Ethereum the technology’ section. Better developer tooling leads to better end-user products. Better end-user products further increase demand for Ethereum the world computer, which creates more transaction fees. Increased transaction fees result in more deflation, as highlighted directly above. And it continues. The two flywheels, that of Ethereum technology and that of Ether the money, are fully interlinked, compounding in lock-step: [19]:



Or, more simplified:



Cherry on the Sundae: Schelling Points

Similar to a public blockchain, money is also an information technology. It may be less obvious that this is the case, as information technologies are typically thought of as things that allow us to communicate more easily, like the telegraph or the internet or Ethereum the world computer. However, money also allows us to communicate more easily, as it allows us to keep score of the competition that is capitalism. The money chosen as the world's ultimate common denominator is referred to by some economists as a Schelling Point.

A Schelling Point is an interesting concept: in the complete absence of information on what others are currently doing, what would you yourself do? The Schelling Point in investing is the world reserve currency, or, practically speaking for the past eighty years, US government debt. People measure wealth globally via the dollar.

Schelling Points experience network effects because Schelling Points only exist if there is a societal consensus around that decision. Thus, the more people that treat Ether as a Schelling Point, the more that other people will treat it as a Schelling Point, even if they choose not to use Ethereum itself for any other purpose. This makes the above flywheels even stronger, as all people are memetic, regardless of their understanding of the underlying technology or fundamentals.

Risks - Are There Any?

Ethereum the technology carries no risks at this point. It is too far ahead of its competitors in every regard, with its network effects causing its growth rate to be vastly larger than every competitor. A great example is that Ethereum forks (Binance Smart Chain and Polygon) in a few months both achieved significantly more adoption (as measured through assets under management and transaction fees) than any competing chain that hasn't directly copied Ethereum the technology. The only risk would potentially exist on the monetary side, specifically on the supply side, but we believe is minimized due to the shared principles of the majority of Ether holders.

Money as Legitimacy - The Gini Coefficient

The greatest potential risk for any money is legitimacy. Legitimacy becomes questioned when outcomes are un-indicative of contributions--almost every nation state institution is currently facing all-time high levels of distrust, for this exact reason. Outcomes can be measured in Gini Coefficients. There is a science to what level of inequality society deems acceptable. How large can a Gini Coefficient grow before the system pushes back?

While the crypto revolution has been the most accessible revolution in human history, it also happened at the climax of an eighty-year long-term debt cycle, where wealth gaps are at century-long highs. Ether's greatest risk is that it follows the same wealth distribution as today's wealth gap, and thus its legitimacy becomes questioned, just as trust in most governments and institutions has fallen drastically. While we believe this is likely to be avoided, as the early buyers of Ether tended, on average, to be from a different class than the modern elite, it still remains a possibility. The disfavored majority could fork Ethereum the technology, with a new token distribution that only goes to them and not current Ether holders.

However, where Ether differentiates itself from competing currencies, even nation-states', is the speed at which it can update itself, a byproduct of replacing bureaucracy with code. Ether holders can counteract any majority game to displace Ether as money through Ethereum's internal governance process. Someone could (and, given the ethos of the Ethereum community, likely would) propose an Ethereum Improvement Proposal (EIP) to take 10% of Ether from the 10 largest holders and pass it on to the bottom 10%. This is analogous to the Gold Reserve Act of 1934, during similar inequality and debt to output problems. The only

difference would be that Ether's wealth redistribution would happen through direct democracy at the network level, instead of relying on representatives who frequently fail to perfectly represent their constituents, usually because they too can act as middlemen, extracting maximum value for themselves over their constituents. Like 1934, there is the risk that governments seize Ether directly, instead of it happening at the network level. These are good problems to have—it means Ether has won and the world is trying to figure out how to deal with it, at a price magnitudes higher than where it is today.

An alternative at the network level, because people hate taxes, would be to propose a universal minting directly where everyone is given the same amount, similar to universal basic income (UBI). If a majority of Ether holders voted to pass the proposal, Ether's distribution would update simultaneously. Like any money, inflation makes it less sound. However, money is only as strong as it is legitimate, and any money controlled by the select few will never be legitimate. Thus, inflation can improve money's legitimacy at times. Look no further than the United States today.

So long as Ether maintains legitimacy, it is unfathomable to see what will displace it as the next winning non-sovereign money. To maintain legitimacy, the Ether community will only need to abide by one principle, one engrained already throughout the entire Ethereum community since its inception, largely due to its existence at the crux of Ethereum's mission: fairness. So long as Ether continues to stand for fairness, Ether as a money cannot be beat [20].

In Conclusion

Both Ethereum the blockchain and Ether the money are mutually and independently defensible — the cost of switching to a new blockchain or new reserve currency on their own is massive. The cost of doing both is nearly unfathomable. So unfathomable that we believe it to be impossible. As the world recognizes that impossibility, the price of Ether the money may far outrun its value purely based on the cash flows generated by Ethereum the technology.

As fast as the network effects of a store value can lift one asset up, they can also cause another to fall, and quite painfully. We believe this does not bode well for the dollar or sovereign systems—equities, real estate, and bonds—more broadly, as their store of value premium becomes partially and then fully shifted into Ether. The current store of value system has produced record high debt to output, record high intra-country wealth gaps (hello populism, record low trusts in institutions, and increasing geopolitical conflict), and dependence on one country that no one else wants (no one likes the dollar standard besides those that can print dollars). Two compounding exponential growth factors, merged with a world ready to move on from the dollar, will create a paradigm shift that most people haven't seen in their lifetimes. The internet will give everyone a front seat for it, rendering it even faster. Information has never traveled this easily before—it has never been easier to find the next Schelling Point. See you at the moon.

Endnotes

[1] The free market constraint disqualifies companies that silo data (i.e. Facebook) or hold patents with timebombs (i.e. Pfizer). Over the long-term, once their poor user experience or regulation-based protection ends, so will their monopolies, and consequently so will their margins and their investors' returns, barring management teams that remain innovative for infinity, which has proven impossible across all fields.

[2] We want to find monopolies that will persist as long as possible, primarily due to the theory behind ergodicity economics (Ole Peters will win a Nobel prize one day)--that you never know when the market smartens up and the time-average value and expected value converge.

[3] To persist as long as possible, a monopoly must be as defensible as possible. Defensibility is pretty simple--what stops other people from doing something as well as the monopoly. The most popular term to analyze defensibility is moats--you may hate the word because boomers use it, but there's a reason they use it--a moat describes a feature of the monopoly that makes it particularly defensible.

[4] Ethereum was the first public blockchain to offer smart contracts that can execute any algorithm (this is known as Turing completeness), thus allowing it to compete with the old world computer before Bitcoin or other competing public blockchain could.

[5] Here's what a former Head of Product and Engineering at Stripe--a fintech middleman worth hundreds of billions of dollars, said: "Stripe has a huge team working for years on a product that I just prototyped on Etherium in a day. Crypto is an absolutely crazy alien technology that hasn't even begun to make a dent." (Source). His Handle wasn't .eth at the time of the original tweet.

[6] There will still be front-ends overlaying these smart contracts, so you still may use the Uber app or the Amazon website, but there will be many of them, similar to how yearn.finance already has over 10 different versions of its front-end if you include its referral partners.

[7] Because Ethereum is only seven years old, it is still fairly primitive in its development, but is in the process of upgrading to 1,000-5,000 tx/second this summer (depending on their complexity) via rollups. Visa does 1,700 transactions per second on average and peaks around 4,000 tx/second. That means Ethereum can meet the performance of Visa, while offering users additional finance primitives (i.e. trading, lending, and borrowing) that Visa cannot. All on a fully decentralized architecture.

[8] The more money being lent through Ethereum, the more likely a bigger borrower will enter, which will further entice more lenders to entire, which will further entice more borrowers, and the flywheel continues. The same goes for trading or exchanging [6a].

[8a] The biggest question among DeFi projects is which can build a moat themselves, such that their code cannot be easily forked and margins driven to zero (i.e. defensibility).

[9] Developers have two options when they see a piece of code they like: either call the existing code from their own code (this is called composability) or just copy it and brand it as their own code (this is called forking).

[10] As Ethereum continues to scale, following Bizantine's Law, even layer-ones that tackle use cases currently too computationally intensive to execute on Ethereum, such as Filecoin or Helium, will end up becoming composable/forkable smart contracts on Ethereum.

[11] So long as Ether is the only unit account that the Ethereum blockchain allows to be used as a punishment and reward mechanism for miners/validators--which must be the case due to the fundamentals underlying all of cryptoeconomics [11a]--the value of Ether is backstopped by the revenue generated by Ethereum the technology.

[11a] A public blockchain can only be secured by one asset, as a blockchain requires one unit of account when rewarding or punishing its miners/validators. Having a second asset would require real-time updates to requirements as a staker in Proof of Stake consensus protocols, which is the direction of all blockchains, as well as an on-chain oracle accounting for exchange rates when rewarding and punishing validators. An on-chain oracle removes credible neutrality from a public blockchain, rendering it significantly less effective as a public platform.

[12] Because Ether must be held to stake and receive the transaction fees and/or future inflation of Ether, even those who do not stake Ether hold the asset that directly benefits from others' demand to stake. Those investors must buy Ether to stake.

[13] The traditional knock on gold is that it is unproductive and unuseful--there are no cash flows associated with it beyond one dollars worth in a smartphone. Certain investors only will touch productive assets. Ether is a productive in the digital world as oil is to the physical--talk about demand--and allows Ether holders to earn more oil by securing the platform [13a].

[13a] This is how proof of stake consensus algorithms work.

[14] Technically users could hold other assets, such as stablecoins, and exchange them for Ether in real-time, using automated market makers on Ethereum. However, we believe that even those that use Ether for consumption, especially those treating it as productive capital for their business, will also hold it beyond one block, due to its low inflation rate and their understanding of the utility of Ethereum technology.

[15] Even as Ethereum scales and each transaction becomes cheaper, cheaper transactions will drive significantly more volume and demand, as more and more types of transactions and algorithms become executed on the platform. This will lead to higher fees paid to stakers, despite the technology becoming cheaper for each individual user to use.

[16] From July 1, 2020 to June 30, 2021, inflation accounted for 6k Eth paid to miners, while transaction fees accounted for 4k Eth paid to miners (Source: The Block). Transaction fees are likely significantly undercounted for the most recent months of 2021(March - June), as flashbots and other off-chain miner extractable value marketplaces went unaccounted for, despite growing at an exponential rate. Miner extractable value will be a significant source of revenue to miners going forward.

[17] The amount of Ether staked will increase, as more capital tries to capture the fees by staking. More Ether staked directly leads to a decrease in Ether's inflation rate, while still growing the security of the platform, all the while the total amount of capital securing the network, as well as number of people investing that capital (decentralization for the win), grows.

[18] Inflation in proof of stake systems, which Ethereum is in the process of becoming, directly decreases as the amount staked increases--the inflation rate of Eth is directly inverse to the amount of Eth staked, similar to any bond. Ether is also a perpetual bond.

[19] All of the initial demand for Ether the money was driven by Ethereum the technology--fees needing to be paid and wanting to be captured--although one could argue that before Ethereum had any fees, it had Eth the asset, and so financial incentives were really the ultimate kickstarter. The chicken or the egg.

[20] Outcomes will never be equal--fairness only implies that everyone is rewarded proportionately to their benefit to society. No one can win a longform argument about fairness, when debating the majority.

[Appendix Note on EIP1559] Additionally, a portion of fees paid because of the technology (approximately half) are burned through EIP 1559, thus pushing supply even lower, although one can argue that burning is simply a method to reward all holders of Eth, including those using it as productive capital, as opposed to just stakers. Some point to EIP-1559 as a simple trick to make the price go up. It is, but it's slightly more nuanced. EIP-1559 is Ether's way of signalling to the world that it is committed to being the most deflationary asset in the world, sovereign or non-sovereign. Some say that EIP-1559 shows that Ether's monetary policy is malleable and therefore unsound. It is actually the opposite: any monterey upgrade after EIP-1559 will be to make Ether a better money, just as EIP-1559 is being implemented to make Ether a better money. Ether will be the most sound money in the world, while simultaneously allowing its holders to earn real returns through securing the network as stakers.

[Appendix Note on Additional Improvements over Gold] There are other reasons why Ether is better than the status quo beyond being a productive asset and incredibly useful currency. One characteristic is that it is fully digital--people fleeing a country or dictatorship cannot carry gold, but they can carry a phone. Another is that as Ether's demand grows, its supply side dynamics improve, which further increases its demand, creating two extremely reflexive flywheels, outlined below.