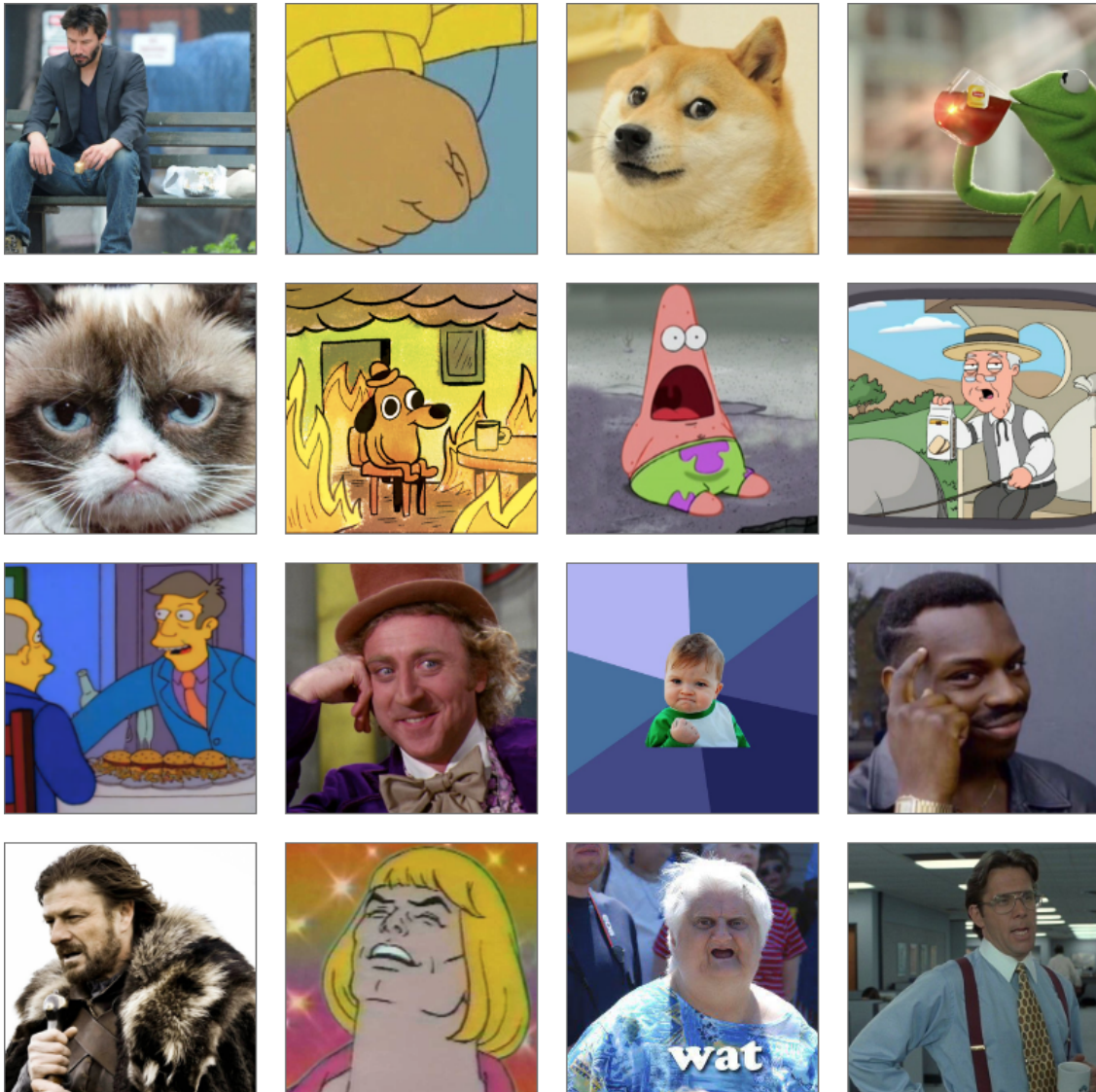# Meme Merchant

White Paper v0.1

Tradable memes enabled by blockchain technology

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Motivation

What are Memes?

Richard Dawkins first coined the term "meme" in his seminal work, <u>The Selfish Gene</u>, to characterize the concept of cultural replication. An idea, maxim or theory was subject to the same evolutionary process that dictated the survival of genes. T.H. Huxley phrased it best, stating, "The struggle for existence holds as much in the intellectual as in the physical world. A theory is a species of thinking, and its right to exist is coextensive with its power of resisting extinction by its rivals" [1]. The memes of the internet, though likely lacking in the gravitas Dawkins envisioned of these "units of cultural transmission", are perhaps the best example of this process—propagating and mutating at light speed through all corners of the internet, from niche message boards to viral YouTube videos with millions of views.

Memes are the closest humanity has come to achieving a common sense of humor. A meme has no clear structure, but there are a certain notes every meme hits. A meme typically emerges from a base template, whether it be an image, video or particular phrasing, which then undergoes countless transformations to be applied in different specific contexts. If this explanation doesn't satisfy, that is likely a result of the essential truth that the definition of a meme is not clear cut. Yet for the initiated, recognition is instantaneous. Trite as it may be, you know it when you see it.

An example is probably a better vehicle for full comprehension. Consider the currently popular meme "American Chopper Argument". In its original form, it's a clip (cw: half the dialogue is bleeped curse words) from the reality TV show, "American Chopper" that last aired in 2010: https://www.youtube.com/watch?v=3y0bQYDA9Vw.

It depicts an argument between the boss of a custom motorcycle manufacturing shop and his perpetually tardy son. With dramatic flair that makes "Keeping Up with the Kardashians" seem like a C-SPAN live stream, the discourse erupts into a violent exchange that ends with a thrown office chair, flipped trash can and what was likely a masterful cut to commercials.

Almost a decade later, this clip has arose from the cultural garbage heap to spawn a new meme image format where four screenshots, two for each of the men, are used consecutively to depict crescendoing points and counterpoints regarding a controversial topic, ranging from the trivial to the biblical[1]. Here are two examples:

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[1] To get a better sense of this specific meme as well as the impact of memes in general, delve into this excellent article from Vox magazine: https://www.vox.com/2018/4/10/17207588/american-chopper-meme

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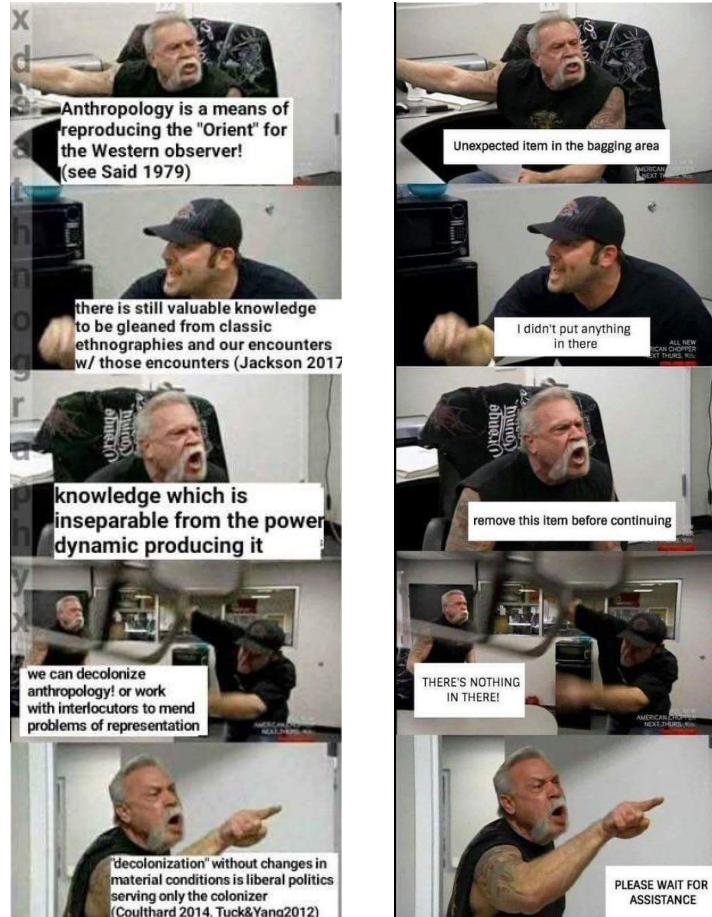
Figure 1. Two versions of the American Chopper Argument meme applied to anthropology (left) and to a common self-checkout predicament (right), illustrating the versatility of memes in different contexts

The key distinction to be made is between the specific instances of the meme and the general meme template. Confusingly, both are called "meme" interchangeably in the vernacular. As far as this paper and Meme Merchant is concerned, the template is what is defined as a meme. These templates are the fundamental units that are tied to Meme Merchant's tokens and these are the items to be traded in the marketplace. By this definition, the meme shown below still falls under the same umbrella of the "American Chopper Argument" meme. Though it has different faces superimposed, the meme logic is identical, thus making it the same meme.

Figure 2. Another version of the American Chopper Argument meme. Despite its deviation from the original image, it still follows Meme Merchant's definition of that meme.

What makes memes a compelling choice for a marketplace is their volatility—their participation in the same struggle for survival that governs all organisms. A meme's lifespan is determined by its ability to be applied to new situations. Its adaptability is its evolutionary advantage. For example, a meme might experience a burst of popularity in response to a current event but its longevity is guaranteed only if it is able to maintain relevance by possessing an intangible circumstantial agility. The rapid shifts in the meme world, implemented with the speed and ferocity of the internet, coupled with its universal appeal, makes it an exciting and entertaining space for trade.

Similarities between blockchain and meme propagation
Blockchain is powerful because it is decentralized. There is no central authority, anyone can participate, and once a piece of data is added to the blockchain, it can never be removed. When thinking about the creation and propagation of memes through the internet, the similarities quickly become apparent. Anyone can create a meme, from anywhere in the world, and once they have posted the meme somewhere online, it quickly approaches a point where it is next to impossible to remove from the internet due to the decentralized nature of participants who share memes. While there are certainly large clearing houses which create and manage

meme content, such as [Quick Meme](#) and [Know Your Meme](#), these resources aren't required in the process of creating, sharing, and storing memes. If Know Your Meme removes "Evil Kermit" from their database, it is still available in countless places across the web, as well as on our own desktops. Additionally, it has been shown that the likelihood of a meme going viral isn't dependent on who shares the content, but the likelihood is based on the intrinsic qualities of the meme [2]. The meme community represents a community of distributed and unrelated actors who have created a global market without the need of a central clearing house, achieving many of the qualities ensured by blockchain technology.

Harnessing meme popularity to create a new blockchain community

Cryptocurrencies have been in the spotlight a lot in the last year. The frequent price swings have created equally significant emotional swings for those invested in the market. Recently, the ugly side of the cryptocurrency market reared its head, leading to negative associations. Unfortunately, this has cast a shadow over the other opportunities created by blockchain and distributed ledger technologies. The mainstream understanding of blockchain is that it is the underlying technology of cryptocurrencies like Bitcoin and that's all it is good for—transactions driven principally by greed and speculation. However, there are hundreds of blockchain applications which will positively disrupt our way of life which have yet to appear in the mainstream dialogue.

Here at Meme Merchant, we want to help bring blockchain and its other applications to the mainstream dialogue by leveraging the online meme community. The meme community can rapidly create exposure for Meme Merchant which in turn can bring blockchain technology into the mainstream conversation, even if individuals only possess a cursory understanding. Revolving around social interactions, pop culture references, and shared experiences, memes are built by various communities and are rapidly disseminated to all corners of the web. While some of these communities are less accessible than others, the memes themselves can end up anywhere on the internet. Most people who use social media have interacted with memes. Passive engagement with memes may involve simply laughing at a meme that popped up on their Facebook wall to sharing said meme with some friends; however, more involved communities have evolved. From Reddit to Facebook, communities created from distributed groups of individuals are 'memeing' every day. For example, each Big 10 university has a meme page on Facebook where students produce and create content for each other. This expansive network of individuals led us to believe that creating a blockchain application for the meme community has incredible potential to forward the mainstream understanding of blockchain and distributed ledger technologies. Even if only 1% of users read another article on blockchain technology as a result of using Meme Merchant, it is a tangible step towards bringing blockchain into mainstream fold.

An educational tool for the creators!

Meme Merchant is a project initially intended to further our understanding of blockchain technology and its capabilities. The best way to learn about a new technology is to use it to develop a new product, so we set out looking for a project which would hinge on blockchain

technology. While memes may not initially strike the reader as a medium for intellectual discovery, this project has given us the opportunity to learn about full stack blockchain development in depth. Among many concepts, the project has required us to learn about smart contract testing, token types, blockchain integrated UI/UX, auction logic, and market hosting. This has been and continues to be an incredible learning experience for us.

Product

Token Type (ERC721)

Every meme on Meme Merchant is a [ERC721](#) token. ERC721's are non-fungible, meaning that they can not be replaced by another equal part or quantity. Essentially, if you own a ERC721, you are the only one who can own that token at that time and the token can't be split into smaller pieces to be sold/bought as parts. This means that if you buy the "Surprised Patrick" meme, you own it in its entirety. Nobody else can own an equivalent "Surprised Patrick" meme and if sold, it must be sold as the whole meme (you can't own part of the "Surprised Patrick" meme). The unique attributes of memes, and the various ways to interpret the value of a meme (e.g. value isn't set by a central standard such as the Federal Reserve) are what take away the meme's fungibility. Depending on the 'exchange', memes are valued differently and cannot always be used interchangeably [3].

Creation & Management of Meme Database

When developing our database of memes, the nature by which new memes will be added to Meme Merchant was carefully considered. The ideal structure of the Meme Merchant is one which is permissionless and trustless, just like public blockchains. Though initially some bootstrapping will be required, those qualities are our ultimate goal. It is with this mindset that we developed the protocols for creating and managing the memes which are actively traded at Meme Merchant.

To bootstrap, we will start with a set of initial meme offerings (IMO) where memes will be auctioned and bought for the price set by the market in order to create a user base. By doing this we will create an initial population of vested users, which is important for the process of adding new memes. Ideally, the IMO is something which only needs to occur once, and user involvement will maintain the database in the future, creating new tokens for memes that the community would like to trade.

Once the initial set of memes are uploaded to Meme Merchant, it is the job of the community to accurately maintain and upload valid new memes. This quickly becomes tricky due to the various incentives created by this market place. A key to the operation of Meme Merchant is ensuring that a token issued for a meme, such as "cereal guy", isn't a duplicate of an already existing "cereal guy" meme token. If this occurs, the owner of the original "cereal guy" will no longer own a unique meme, decreasing the value of his meme. As a result, the original owner will lose trust in Meme Merchant and will no longer trade memes. This has a snowball effect as

other owners would become concerned about someone duplicating the memes that they own. Likely, these owners would sell any memes they own to get out of the game, causing Meme Merchant to meet its demise[2].

The way that this is prevented is by using a system of democratic user upload. First, we will define terms used to explain this system:

> User: anyone who has a login with Meme Merchant

> Vested User: anyone who owns a meme OR anyone who has participated in a transaction within the last 30 days

> Ownership Voter: a user who has voting power due to their ownership of a meme. Voter status due to ownership is independent of how regularly they participate in Meme Merchant

> Transaction Voter: a user who has voting power due to participating in a transaction within the last 30 days. These users are considered the communities active users. If a user is also an Ownership Voter, they are labeled a Transaction Voter for purposes of scaling the required % of votes to confirm a meme

> Vote: the superset term for any voters (Ownership or Transaction)

> Critical Mass: the number of votes a meme must receive in order to be confirmed, regardless of the current population of Transaction Voters

The process of uploading a meme to Meme Merchant is as follows:
1. Any user may submit a meme for verification
   a. Submission requires an image of the meme
   b. Submission requires an appropriate title for the meme
   c. Submitter must provide credentials to provide ownership to meme if verified (automatically verified by backend software, not the voters)
2. Voters are notified of the new meme submission
3. Voters compare the submitted meme to the memes currently available on Meme Merchant
   a. Voters are provided with a simple search function which rapidly allows them to search all the memes in Meme Merchant's database
   b. Voters should verify that the meme meets the required standards before confirming
4. The voter then votes to confirm or deny the new meme
   a. If the voter confirms the new meme, no further action is required

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[2] If it is hard to imagine this scenario, ask yourself what would happen if you could create $5 out of thin air. The value of the dollar bill no longer represents value created by work. Subsequently, over time, the dollar would no longer have value.

      b. If the voter rejects a meme they must create a warning flag which other voters can then see
            i. Warning flags alert voters to concerns about a meme submission
            ii. Flags specify the reason for rejecting a meme submission
                1. Poor title
                2. Duplicate Meme
                3. Meme category too broad/narrow
5. If a meme is denied, the submitter is notified with an explanation and suggestions for future submissions
6. If a meme is confirmed, the submitter is notified and they are issued the token corresponding to the meme they submitted.
      a. *ADDITIONALLY*, the submitter must pay for the transaction cost for submitting the new meme to the blockchain (usually less than 0.05 USD)

In order for a meme submission to be confirmed, 51% of the population of current Transaction Voters must be reached. The population of current Transaction Voters is used as the benchmark to scale the required number of votes. These individuals are the most active in the community and likely have more of a vested interest in the outcome of the vote. Vested users don't have a rational malicious incentive since their monetary value invested in memes is put at risk if they don't follow the rules of confirming new meme submissions. That being said, purely ownership voters are always allowed to vote and their votes and the votes of Transaction Voters are held equal.

If 51% of the population of current Transaction Voters is less than the critical mass of 100 votes, 100 votes must be achieved for a submission to be confirmed. The 100 vote baseline is used to protect against periods when the population of Transaction Voters has diminished to a point where a malicious actor could damage the market.

Auction logic

Auction logic for Meme Merchant required consideration of the limitations of interacting with the Ethereum blockchain. Each interaction with the blockchain requires a transaction fee (gas). Because of this, an auction where users submit increasing bids over a set period of time is less than ideal as users would need to pay for each bid they submit. This problem was solved by the team at CryptoKitties who designed a "descending clock auction":

> "Sellers choose a high opening bid, a minimum closing bid [i.e. reserve price], and a timeframe for which they'd like their auction to run. Buyers are able to choose their purchase price along that spectrum by purchasing when the price aligns with their perceived value of the CryptoKitty being sold – as long as someone else doesn't buy it before them. Buyers pay gas when they complete a purchase and sellers pay gas to initiate an auction." [4]

Meme Merchant will utilize the same auction logic. This auction logic will be used in every auction at Meme Merchant, including the IMO.

To bootstrap Meme Merchant, the IMO will consist of 250 "legacy memes" to be released randomly to the marketplace at a set rate controlled by the smart contract. The smart contract will place a new meme in the marketplace every hour (last legacy meme released 10.5 days after launch). Each meme is then sold in auction. The auction for each meme will last for 2 days after its release. The initial price will be set to $10 with a reserve price of $0.01.

Burning old memes

As previously noted, a key feature of the meme ecosystem is the rapid birth, death, rebirth and re-death of memes. The masses are fickle and the internet memeing demographic is borderline capricious. Many memes that were once considered valuable will inevitably lose value once their relevance has faded. If they never experience a reemergence of popularity, old memes, and their associated tokens, will essentially become worthless. While this phenomenon will not affect the actual functioning of the token system, it poses two problems from a community standpoint.

Principally, it would be poor database management to have memes not in circulation sitting idle within the Meme Merchant community. Memes are all about relevancy, so we want to present a marketplace to the users that is a true reflection of the current memescape.

There is also a danger of having memes be tied up with users who, having seen the price of their meme asset fall, have become discouraged and left the Meme Merchant community altogether. Still, their inactive accounts will own the memes in their portfolio. If a formerly obsolete meme becomes popular again a few months later, there is no way for it to be reassigned to a new token and made available on the marketplace for trade. Of course, if the user who owns it notes the resurgence in popularity and dives back into trading, there's no issue. What we want to avoid however, is dead memes that clutter the marketplace and dead (metaphorically) users who leave the community after an unfavorable turn of events.

Our solution is an incentive system that encourages users to burn memes (i.e. the tokens associated with them) in their possession by streamlining the burning process and rewarding their efforts. The process is outlined as follows:

1. Every burned meme rewards the user with 5 free Ethereum blockchain transactions on Meme Merchant whether it be:
   a. Trading memes
   b. Uploading new memes to the marketplace to be voted on
2. All newly uploaded and community approved memes have a guaranteed minimum lifespan of 7 days in the marketplace.
3. A burned meme suffers a minimum death of 7 days before it can be re-uploaded to the community.

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User participation is important for the functioning of Meme Merchant. This incentive system will encourage users to stay engaged and active in the community.

Revenue Model

Meme Merchant will initially receive revenue from the IMO. This is opposed to using an ICO which is a common way for blockchain applications to garner the initial users as well as revenue. We believe that the uniform time release of memes is ideal in order to eliminate many of the risks and concerns associated with ICO's.

In addition to revenue realized from selling legacy memes, Meme Merchant receives a small percentage (3%) of each trade completed in our marketplace.

Conclusion

Above all, Meme Merchant's mission is centered around humor and education. The authors have true, deep-rooted love for memes—for their versatility, their unifying presence on the internet and their democratic decentralization. The authors also have a love for blockchain technologies, and believe strongly in its numerous potential use cases and its singular potential to better the world. By combining these two spaces, we believe that a fun-loving, relevant platform will be born that at once provides an approachable introduction to the world of blockchain and encourages more people to delve deeper and learn more about this amazing technology.

Additionally, we are filled with gratitude towards those on whose shoulders this platform will stand. We thank the Ethereum community for providing the blockchain on which this application is hosted and their tireless efforts to improve and scale the technology. We thank the team at CryptoKitties for pioneering the use of ERC721 tokens and bringing their uses into the public eye. We thank all the users who will embrace this new platform and help it realize its full potential.

Though it may seem trivial, we believe a blockchain-based meme trading platform is a real chance to increase awareness by tapping into a popular form of internet discourse. We are dedicated to promoting the technology and to creating a space to learn and engage through humor. While the memes may be jokes, the power of blockchain isn't, and we hope our platform is impactful in spreading the word.

Thank you for reading, happy memeing and remember:
https://www.youtube.com/watch?v=dQw4w9WgXcQ.

The Meme Merchant Team

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