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The Budding Disruption of Blockchain Technology Upon the Current Structure of the Music Industry

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THE BUDDING DISRUPTION OF BLOCKCHAIN TECHNOLOGY UPON THE CURRENT STRUCTURE OF
THE MUSIC INDUSTRY

By

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I – ABSTRACT

One of the most pertinent opportunities within the music industry, and many other industries as well, stems from the use of blockchain technology. Blockchain's core technology, which enables smart contracts and non-fungible tokens (NFTs), could be used to restructure and decentralize the music industry to be in alignment with the best interests of artists - the individuals responsible for driving the success of this industry.

The current system is outmoded. It evinces a disparity in the level of information held by artists and intermediaries (i.e. labels, publishers, and streaming services) and this disparity enables intermediaries to deduct egregious fees that in many cases do not serve the purpose of benefiting the artist (Taghdiri 2019, 173). Such fees may have been originally created for necessary reasons (before the internet and mobile device proliferation decreased the difficulty of distribution to fans, for example). However, fees to intermediaries are too high relative to the share of an artist's earnings in today's day and age. Further, royalty payments are often not received for lengthy periods of time, delivered to the wrong party altogether, or never delivered to any party at all. In addition, artists will have little to no information related to the calculations behind their royalty payments, which leaves them without any other option than to blindly trust the intermediaries.

Blockchain presents opportunities for the music industry in the following ways: (a) universal transparency amongst all parties; (b) automatic execution of payments; (c) the removal of unwanted third-party intermediaries; (d) increased royalty payouts for content creators (Taghdiri 2019, 174); and (e) the ability to create non-fungible tokens. This technology is still not fully

ready to become the new normal, and the various barriers to adoption are just as important to consider as the potential upside of adoption.

II – INTRODUCTION

The only aspect unchanged between the music industry of the 1950's, when the industry was first constructed, and today, is the dynamic of artists making music for fans. Other than this simple truth, every characteristic has changed in some way since the industry's conception. With each change in the way music is recorded, consumed, shared, licensed, sold, tracked, and discovered, the industry has evolved, implementing new common practices and procedures and integrating new technology.

Artists demand for fairness and transparency is at levels not seen since the creation of Napster in the early 2000's, and this upswell has been placed at the forefront of the public's attention through recent struggles between artists and their labels, including Kanye West, Paul McCartney, Dr. Dre, Taylor Swift, Prince, Brad Paisley, and John Fogarty.

The music industry is a subset of the Creator Economy, the overarching network of creative individuals who receive income through generating content for consumption by individuals who use the internet. The Creator Economy's goal is to democratize creative expression and entrepreneurship, allowing individuals without the resources of the incumbents to survive and thrive in such an environment (Bergendorff 2021). This represents a stark transition from the Attention Economy, which was representative of the internet up until this point and was defined by using consumers' purchasing habits and data for heavy advertising by a few large media

companies (Bergendorff 2021). In essence, the Attention Economy speaks to an audience while the Creator Economy engages with an audience and creates a community around the specific creator, empowering the individual to be both the creator and the consumer in different contexts and across many platforms (Bergendorff 2021).

Any individual who creates content to be consumed is a player in the creator economy.

YouTubers, graphic designers, Instagram or TikTok influencers who monetize through paid posts, chefs who share their work virtually to subscribers, advertisers, travel bloggers who visit and review specific hotels for a fee, individuals who sell art on online marketplaces, and musical artists are all examples of content creators. In previous papers, musical artists would be referred to as ‘content creators’, but this catch-all term is too inclusive to be truly representative of the population being discussed. For this reason, I will use the term ‘artist’ to describe musical artists in this paper. We have seen many examples of visual artists using blockchain technology to sell their work, especially recently in early 2021, and although this application is similar to that of musical artists’ endeavors in the blockchain space, it is not identical. This paper will focus on the role of the musical artist subset of the Creator Economy in the blockchain space.

This transition from the Attention Economy to the Creator Economy is encapsulated in the transition from the Internet of Information to the Internet of Value. Prior to the invention of blockchain technology, the internet was used mainly for acquiring information about topics and people, and anyone moving anything of value online (typically money) was doing so through an intermediary - such as banks, credit card companies, PayPal, and Western Union (MacIver 2016). In order to do almost anything on the internet, a middleman would need to be involved,

which centralized the internet and placed the power and data - along with all of the responsibility, revenue, expenses, and potential for error - in the hands of a few large players.

The transition to the Internet of Value, however, is representative of the creation of blockchain technology and changes the dynamic to a decentralized peer-to-peer system without the need for third parties to function. As Don Tapscott, author of *Blockchain Revolution* stated, “[t]he Internet of Information was great, but it did have a big weakness, you couldn’t store, move, transact value without a powerful intermediary. And that’s what blockchains solve.” (MacIver 2016).

Blockchain technology has the power to restructure the internet completely, and this transformation’s application within the music industry is the grounds of this paper.

The aim of this paper is to address the following topics:

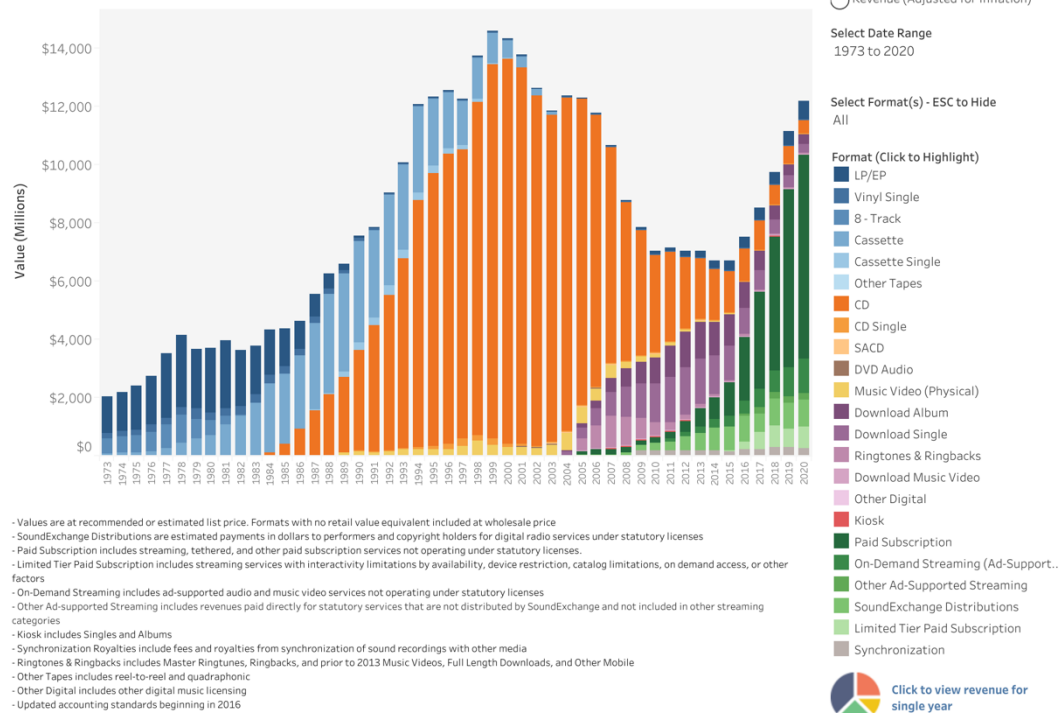
1. What is blockchain technology?
2. Why is blockchain technology needed in the music industry?
3. Who is currently responsible for driving this change?
4. What are the future applications of this technology?
5. What are the barriers of adoption?

The digital revolution, with Napster as the first true peer-to-peer digital music service, made music sharing free and easy but also created a major revenue problem for the music industry (Sing 2017, 2). Whereas artists traditionally relied on physical sales for income, the shift to digital distribution redefined the industry. As seen in the graph below (RIAA 2020), U.S.

recorded music revenues have completely switched mediums, with the overwhelming majority of revenue now coming from digital sources.

U.S. Recorded Music Revenues by Format

1973 to 2020, Format(s): All
Source: RIAA



In the early 2000's, music sales were declining at an alarming rate, mainly due to the prevalence of online piracy as a result of Napster and other similar companies. With the invention of Digital Service Providers (DSPs) such as Spotify and Apple Music, ground has been made up, but we still are not seeing the level of revenue generated pre-Napster. The paradox here is that although levels of revenue are close to where they were prior to the digital revolution, artists - especially small to mid-level artists who need it most - are not earning the level of income which many feel they deserve based on their numbers on DSPs. This is a result of the streaming payout model which overwhelmingly favors large commercial acts (Mejia 2019).

According to a breakdown by Digital Music News, in order for an artist to earn the federal minimum wage of \$290 per week (\$7.25 per hour for a 40 hour work week), using Spotify's reported royalty rate of \$0.00492 per stream, the artist would have to accumulate approximately 58,943 streams per week (King 2021). It is important to note that each state has varying minimum wages, so for an artist based in California, one of the epicenters of the music industry where many artists are located, to meet the minimum wage of \$560 per week (\$14 per hour for a 40 hour work week), they would have to amass 113,821 streams per week, or 455,284 per month (King 2021). Granted, artists have more revenue streams than Spotify alone, but this level of streaming is near impossible to attain and maintain, and after paying out all necessary third parties, the artist is left with even less. For this reason, amplified by the dominance of streaming's overall share of the U.S. recorded revenues, smaller artists are experiencing low payouts from DSPs.

Prior to the COVID-19 pandemic, artists relied heavily on live performances to supplement this reduction in revenue from physical sales. However, with the absence of live events, artists have increasingly turned to sources that allow fans to pay for exclusive content. Through the use of NFTs, blockchain technology could provide a novel solution to this problem – a solution that will last much longer than the exodus of live music.

III – THE TECHNOLOGY BEHIND BLOCKCHAIN

Bitcoin, the cryptocurrency which most people associate with anything related to blockchain, was the first cryptocurrency underpinned by blockchain technology and created this technology altogether. All cryptocurrencies use blockchain technology, but the two are not synonymous (Treleaven, Brown, and Yang 2017, 17). A blockchain is an open, digital, and decentralized ledger with the ability to record and execute transactions between two parties instantaneously, without the need for a centralized authority such as a bank, in a verifiable and immutable manner (Taghdiri 2019, 175). The technology makes it near impossible to add, remove or change data without detection from the global community of node operators and miners running the blockchain network (Taghdiri 2019, 175).

Blockchain technology operates by adding transactions to a series of blocks executed intermittently that are linked to one another in a chain. Nodes, which are independent computers connected to the network, are responsible for sharing and validating information in each block and the ordering of blocks in the chain. With a critical mass of independent miners and node operations, blockchain-based networks can become decentralized, with a whole host of participants responsible for executing, validating, and reporting transactions in a transparent and auditable manner, independent from any dominant intermediary.

The openness and accessibility of information allows all actions to be fully transparent - if that is how the creators intended it to be. Blockchains can be permissionless (such as Bitcoin), meaning that anyone can participate and view the information in the system, or they can be can be permissioned, meaning that only individuals with prior approval are allowed to participate in the system as well as access and manipulate the underlying information, such as Hyperledger

(Beedham 2018). As long as a blockchain is permissionless and decentralized, everything done on this blockchain will be immutable.

The two main components of blockchain that make its application valuable and far reaching are decentralized ledgers and smart contracts. A decentralized ledger is an unchangeable, shared, replicated, and synchronized record of transactions between contracting parties secured by cryptographic sealing. Decentralized ledgers are divided into two broad classes by Treleaven, Brown, and Yang:

1. Those that seek to minimize the role of trusted and identifiable third parties.
2. Those that explicitly rely on identifiable third parties for some subset of the system's properties (Treleaven, Brown, and Yang 2017, 15).

Decentralized ledgers can operate in concurrence with a third party; however, they can also replace a third party. This is especially important in the music industry where third parties have shareholders to please, and the end goal of these third parties is to generate a profit off of artist's work. Examples of third parties in the music industry are Collective Management Organizations (CMOs), Performance Rights Organizations (PROs), Digital Service Providers (DSPs), record labels, publishing companies, distribution companies and anyone else who acts as a middleman between an artist and their fanbase. This is not to say that all third parties are bad for all artists. Many artists attribute much of their success to third parties and would not have the same career without them. At the same time, however, many other artists reject the idea of surrendering ownership of their work to these intermediaries in return for their services. The power dynamic

between the artist and intermediary is something that could be amended to be more universally beneficial. Using blockchain, the artists and third parties could embed a clear profit-share agreement into smart contract code and ensure that all future royalties are paid out transparently to all parties.

ETH, the second most widely traded cryptocurrency, is the token underpinned by the Ethereum blockchain, the platform which introduced the concept of smart contracts. A smart contract is a self-executing contractual agreement between two or more parties that has the terms of agreement directly written into the contract's code (Frankenfield 2019). Once the terms of the agreement are satisfied, the code automatically executes the terms of agreement (such as a payment), which are trackable and irreversible (Frankenfield 2019). Smart contracts ensure that all parties of an agreement are on the same page.

Specifically in the context of the music industry, smart contracts are poised to be especially valuable to small and independent artists who are disadvantaged by a lack of tools and knowledge held by many of their peers. These artists are the small fish in the pond, and without the proper leverage and necessary legal representation, they may accidentally sign themselves into an uneven deal, which can prove to be destructive to their career (Rossow 2018). Smart contracts are valuable because they can be created with simplified, clear legal language, and executed immediately and constantly - for example, payments can be streamed to the artist per listen of a song, instead of being aggregated and sent by a label or other intermediary at the end of the month or quarter. Alternatively, an artist could place the terms directly into the metadata

of an NFT representing a specific track or album and sell their contract in the free market as an asset with value.

NFTs are a nascent technology that operates as digital assets representing both tangible and intangible items of value. Fungible assets, such as bitcoin or dollars, are notably different from non-fungible assets, although both are used in the cryptocurrency space. Fungible assets are divisible, which means they can be broken down into smaller fractions of units sharing the same properties. These fungible assets are indistinguishable from each other, which is important for their use as a payment mechanism. Non-fungible assets are indivisible and unique, meaning that the asset cannot be split up to represent a fraction of the whole, and each asset is different from another, with a distinct code underlying each asset. NFTs are non-fungible assets that are built on smart contracts which contain customized information, making each NFT different from the next (Cryptopedia 2021). Through the use of NFTs, an artist would be able to track all sources of revenue – streams, merchandise, touring, licensing, royalties, and beyond – all neatly organized and updated instantaneously so the artist is never in the dark on where they stand from a revenue generation standpoint (Hissong 2021). This data can then be used to inform and execute automatic payments to various parties involved in the release process by way of a smart contract.

Metadata is additional data about an action or item on the blockchain ledger that delves deeper than just describing the action or item and subsequent transaction (if applicable). Oftentimes, metadata is inconsequential, but sometimes it allows an analyzer to identify certain trends about related actions. In the music industry, metadata would describe all of the information about a

song, including ownership and payment information, embedded directly into the file (Celebucki et al. 2020, 5).

IV – CURRENT AND FUTURE APPLICATIONS OF BLOCKCHAIN WITHIN THE MUSIC INDUSTRY

The music industry has been riddled with issues related to copyright management for years. Blockchain makes it possible for smart contracts to store all copyright information in a transparent digital ledger and it is important that this technology is implemented for the best interest of all parties in the music industry. The aspects of blockchain identified by Kapsoulis et. al that are especially attractive for music copyright are as follows:

1. Transparency: any interested party can be part of the system and check on the status of their assets.
2. Trust: nobody can tamper with the records.
3. Traceability: the ability to check the claims that an asset has received over time.
4. Decentralization: no single entity owns the database (the database operates on crowd-sourced contribution).
5. Conflict resolution: confluence in a single view of aggregated assets that allows conflict detection at early stages.
6. Efficiency: disintermediation in an interoperable solution that shares the information instantaneously across all stakeholders and integrates with their back offices (Kapsoulis et al. 2020, 2).

Blockchain systems are uniquely able to ensure that contracting parties have identical and accurate records (Treleaven, Brown, Yang 2017, 16). Currently, there is no singular database that documents ownership of all song/recording copyrights. Rather, information pertaining to ownership of rights is spread out amongst multiple databases, none of which are entirely comprehensive, and all of which contain varying information without a central authority to settle disputes (O'Dair et al 2016, 8). The organizations responsible for collecting and distributing royalty payments to artists every time their piece of work is played or performed are CMOs and PROs, with PROs being a type of CMO (Lorinczi 2019). Due to PROs being a type of CMO responsible for collecting performance royalties specifically, I will use CMO to refer to them both. Different CMOs hold rights to different artists, meaning that if you own a store and have a subscription to BMI and want to play an artist's music represented by ASCAP in your store, you would need to obtain an additional subscription to ASCAP to do so. To further complicate things, each country will have its own specific CMO(s), so in order for an artist to fully receive the entirety of their royalties, they would need to register with a CMO in almost every country in the world. For example, in the EU alone (prior to Brexit), 28 collection societies were responsible for collecting royalties in 28 different markets (Taghdiri 2019, 187). It has been estimated that black box royalties (the royalties that cannot be paid to rights holders due to the inability of the CMO or DSP to identify the holder) are as large as \$2.5 billion, although Billboard has estimated this figure to be around \$250 million, which is a substantial figure nonetheless (Christman 2019). These royalties cannot be paid to the rights holder because the holder is either unidentified or cannot be traced by collection agencies. The root of this problem

is the absence of a singular database of rights holders, and through the use of blockchain technology, a solution may be attainable.

As of right now, only 12% of \$43 billion generated annually by the music industry goes to the artists creating the content that generates this revenue (Rumburg, Sethi, and Nagaraj 2020).

Artists are oftentimes entirely in the dark regarding the calculations that result in the level of income they receive (Jones 2021). This leaves artists susceptible to manipulation by labels and DSPs in the form of unfair payouts. Without the necessary information to contest these payouts, the artist is left helpless and forced to take the word of the intermediary. Blockchain technology would provide artists with the complete transparency necessary to ensure fair and accurate payouts.

The system in place today commonly has latency periods which, although necessary at their time of implementation, are counterintuitive with today's level of technological capabilities (Hissong 2021). For example, artists are forced to wait months for payment from DSPs, causing many artists to live paycheck to paycheck. Although this was needed in the days where labels had to wait lengthy periods of time for records to be sold and revenue to be recognized (for example, to be paid for a CD sold in a record store, the label would have to wait until the CD was sold, then wait for the end of the period or month for the store to pay the label at the agreed upon date, and then further wait for the bank to process the transaction and send the money). This, however, is no longer the case, as we now have the capability to move money instantaneously 24/7, and streaming revenues from 'sold CDs' have the technological capability to be paid out instantaneously (Hissong 2021). This latency period is extremely outdated in today's digital

world, and there is no viable reason why this should continue as the norm. Blockchain technology has the capability to execute payments immediately, which would completely eliminate this waiting period. Venmo revolutionized the banking industry through instantaneous payments, and this characteristic of immediateness will only become more widely adopted across all industries.

In 2014, in an act of defiance of the system, Taylor Swift pulled her entire discography from Spotify. In an op-ed published by the Wall Street Journal, Swift said, "Music is art, and art is important and rare. Important, rare things are valuable. Valuable things should be paid for. It's my opinion that music should not be free, and my prediction is that individual artists and their labels will someday decide what an album's price point is. I hope they don't underestimate themselves or undervalue their art." (Swift 2014). Although Taylor eventually re-uploaded her discography to Spotify, she was ahead of the curve in terms of a vision for a world where artists can once again be price setters rather than price takers.

Spotify and other DSPs value every song on their platform the same, which is a counterintuitive approach to pricing art. Whereas in the days of digital sales, each album would have a different price point (similar to how iTunes prices songs between \$0.00 and \$1.29) every song on a DSP has the same price. This, of course, is due to the revenue model of DSPs, where artists are paid out based on their percentage share of overall streams splitting up subscription and advertising revenue. Although this model makes sense logically, it perpetuates the feeling amongst consumers that music has no value and is inherently worse for small artists who make up a miniscule amount of total plays (Mejia 2019). These smaller artists often have dedicated fan

bases that are willing to pay more to stream their favorite artists' work, and it is for this reason that SoundCloud just introduced fan-powered royalties, making SoundCloud the first major DSP to offer this feature. SoundCloud will allocate the money paid by subscribers to the artists of whom the subscribers are actually listening, thus leveling the playing field. In addition, listeners are able to tip artists if they would like to further supplement their income (SoundCloud 2021). Traditionally, a fan's subscription revenue would go into the mega pool that was split by all artists, and this practice would make it especially difficult for smaller artists to earn a living. Audius, a company that will be discussed later, has made the concept of allowing an artist to set their own price point and receive direct-from-fan royalties an integral aspect of its business plan since conception.

NFTs' application extends to concert tickets as well. Adam Alpert, the manager for The Chainsmokers and CEO of Disruptor Records, co-founded YellowHeart in 2018, a company positioned to help eliminate the traditional ticket scalping practice that takes power away from artists and fans through the use of NFTs (Hissong 2021). In a Rolling Stone article on the Music Crypto Boom, Alpert is quoted as saying, "[w]hat YellowHeart does is it writes the rules for a concert's tickets in a smart contract. So, it can say, 'This is how many seats there are. These are the rows and seat numbers. This is how much the seats cost. This is what they can be resold for. This is how many times they can be resold. This is how old you need to buy these tickets.' Any kind of information that can be governed by a smartphone or computer. And most importantly, you can dictate where the money goes." (Hissong 2021). In addition to allowing the specifics of the ticket to be baked into the NFT, eliminating the risk of counterfeit tickets as the ticket exists as a 1 of 1 asset, the creator can dictate the allocation of resale funds, as well as place a cap on

the value of the secondary sale. For example, if a ticket is sold for \$100 at face value, the creator of the NFT can decide that the maximum the ticket can be resold for is, say, \$200. The creator of the NFT then also dictates where the residual income is allocated. They can have it go entirely to the artist, split up between the artist and promoter, or even sent straight to a charitable organization (Hisson 2021). The money from these secondary ticket sales has traditionally gone to the reseller – resulting in a black-market industry worth an estimated \$15.19 billion (Lunny 2019). This practice of allowing excess returns to go solely to the reseller does nothing to benefit the individuals responsible for making these tickets valuable and only creates a market defined by fraudulent practices and a lack of transparency.

A few prominent examples of artists participating in the blockchain community are RAC, Lil Yachty, Lil Pump, Kings of Leon, Deadmau5, Shawn Mendes, Grimes, Lupe Fiasco, Steve Aoki, and 3lau, to name a few. Day by day this list expands, and the more normalized this practice becomes the more artists will follow suit.

There are many companies making strides in the music blockchain space, and one of the most prominent is Audius, a company that is looking to use blockchain technology as a replacement to traditional DSPs such as Apple Music, Spotify, SoundCloud, and Tidal. At first glance, the Audius interface appears to be similar to SoundCloud, but the underlying technology of Audius solves many problems that have historically plagued SoundCloud. The revenue structure of SoundCloud consists of charging artists to upload content, charging listeners (via subscription or advertisements) to consume uploaded content, and then paying out exorbitant amounts to the record labels for the rights to host the content, with SoundCloud operating at a loss after all payouts are completed (Jake 2020). In order for artists to receive revenue from SoundCloud,

they must pay for a subscription to SoundCloud Pro. Essentially, artists are paying SoundCloud to take their content and, of the revenue generated from this content, the artist will keep 55%, with the other 45% going directly back to SoundCloud (Deahl 2018).

In contrast, Spotify, the largest DSP in the world by market share (Statista 2019), is even more rigged against the artist's best interests. In order for an artist to place music on Spotify, the artist must go through a 3rd party distributor. This means that artists are unable to post music on the platform by themselves and is especially problematic for independent artists without a record label's backing to simplify the process. Spotify uploads tend to be extremely calculated and formal; an artist is unlikely to decide one afternoon to post a song that they created in a few hours that morning because of the process behind uploading. Once a song is uploaded to Spotify, the artist and Spotify split the net revenue from the upload 50/50 (Deahl 2018).

Audius, although still in its beta phase, is reimagining what a DSP can look like in today's world. Traditional DSPs operate on a centralized basis, with the centralized medium (Spotify, SoundCloud, Apple Music, etc) profiting from the artists' labor. Due to Audius' decentralized nature, it is able to operate as an open source platform. What this means is that the platform is owned and operated by the users, resulting in the ability of Audius to operate in perpetuity without the need for Audius to continue to exist as a company (Jake 2020). Creating an open source platform without a centralized company changes the dynamic from making money for a corporation to making money for artists (Jones 2021). Audius recently created its own coin, \$AUDIO, which it distributed directly to its 10,000 most active users. The most active users received the highest proportion of coins, and the total amount of coins in the initial distribution

amounted to 50,000,000 tokens. These coins are essentially an ownership piece of the platform, similar to owning the stock of a publicly traded company, with a distinct value associated with each coin. Owners of \$AUDIO are able to vote on any changes made to the network, and the individuals who created the first version of Audius are unable to make any changes to the platform without community approval. In addition, \$AUDIO owners are able to access features available exclusively to owners, each owner is responsible for assisting in the staking of Audius on nodes, and these nodes continue to earn revenue for facilitating the operation of Audius (Rumburg, Sethi, and Nagaraj 2020). Audius tokens are introduced at a rate of 7-10% per year, and these new coins are redistributed to the individuals participating in the community (Rumburg, Sethi, and Nagaraj 2020). This creates an atmosphere where no matter when an individual joins the community, they will be rewarded for doing so. You are able to earn a seat at the table no matter when you show up (Jake 2020).

Roneil Rumburg, one of the co-founders of Audius, compares the system of music streaming services to the system of video streaming services. He believes that Audius is the audio version of YouTube, where content creators are able to post at their convenience, and the commonplaces surrounding uploading are much more informal (Jake 2020). In contrast, Roneil feels that traditional DSPs such as Spotify are the musical equivalent to Netflix and Hulu, where there are significant barriers to entry (Jake 2020). In order for a movie to receive promotion on Netflix or Hulu, an immense amount of money must be poured into the promotion, similar to the process of getting placement on a Spotify playlist, which typically leverages a record label's promotional backing and can place independent artists without these resources at a disadvantage. This is not to be confused with payola, however, as the record labels typically have relationships with

tastemakers responsible for curating playlists, and the tastemakers trust the labels as a resource for discovering music which will appeal to the masses. In addition, artists signed to a label already have the monetary and promotional backing of the label in all aspects, increasing their visibility and making tastemakers more likely to place them on a playlist where a relationship doesn't already exist.

With Audius, the community decides who is promoted; there is no such thing as a pay for placement from majors. If a track is hot on Audius, it will be automatically exposed to a wider audience. In addition, whereas many popular Spotify playlists are created by Spotify itself and influenced by labels, playlists on Audius are created by independent tastemakers and curators who have a proven track record for discovering talent prior to blowing up. These tastemakers, rather than being compensated from labels, are compensated for their activity in the form of \$AUDIO tokens, which they will continue to receive as long as they are active on the platform. The community is rewarded by the community, which is in the best interest of the community as a whole.

Audius is currently targeting independent artists who have 100% ownership of their content, as these artists have the freedom to post their work wherever they please (Jake 2020). Oftentimes a record deal will include stipulations which dictate where an artist can post content, and these approved locations tend to be a short list of traditional DSPs, which may impede Audius' ability to grow in the future.

Audius' proposed payment structure is different from that of traditional DSPs. As previously discussed, artists and fans are both compensated for participating in the community through \$AUDIO tokens, but this is not the extent of Audius' planned payment system. It is important to note that Audius has not yet launched monetization due to its nature as a nascent idea still in its beta phase. Whereas artists forfeit up to 50% of revenue from songs on traditional DSPs, Audius will only take 10% of revenue, and this money will go directly to ongoing operations of the platform, with the remaining 90% of revenue being paid directly to artists (Jones 2021). In addition to paying artists for plays, plans include crowdfunding artist campaigns, paying artists an amount larger than what is typical for the work (similar to SoundCloud's fan powered royalties), paying for exclusive content, and participating in the long-term growth of an artist on the platform (Jones 2021). The revenue paid out to artists will likely come from subscriptions and ad-revenue from the free version of Audius, similar to the current model of traditional DSPs (Hissong 2021).

Crowdsourcing is taking a stake in an artist's career in an effort to help the artist grow over time and eventually cash in on the growth. This can be compared to buying stock in a startup that you genuinely have faith in and then telling everyone you know of the product or service that the startup is offering. There is a certain pride that comes from discovering an artist early in their career, and it also incentivizes fans to spread artists' music to a larger audience (Hissong 2021). Traditional DSPs fail to incentivize fans to share artists' music, which takes away from the community aspect of music discovery. Due to this dynamic, fans oftentimes will intentionally keep an artist small in order to be the one who knows about good music that nobody else knows

about. This is detrimental to the music community. Audius is working to make community sharing a commonplace.

An area that blockchain technology could revolutionize is the tracking of listener engagement, which would be stored in the metadata of each action on the ledger. Imogen Heap, a grammy award winning recording artist who founded Mycelia, a blockchain focused music company, has said, “where the disruption now needs to happen is in the curation of the feedback, on the data that we, as artists, need to receive. Currently, the power lies in the hands of a few: the distributors and record labels. They receive all the data - for example how many times a track has been listened to. A distributed ledger hosting music would enable artists to see how many times their track had been played, where and possibly even by whom.” (Heap 2016). Blockchain’s unique ability to track and record data would allow artists to receive a more accurate description of the audience who listens and engages with their music. This would allow the artist to effectively promote and push their music to this target market, enabling the artist to grow.

Another company making strides within the blockchain space is Zora, a company that aims to aid artists in the creation of NFTs while capitalizing on the resale market. Zora is built on Ethereum, and it is a protocol rather than a marketplace (Zora 2021), meaning that it provides the foundational layer of code with the guidelines and rules that allow the smart contract within the NFT to function (Liquid 2018). Zora places the marketplace into the digital assets themselves rather than creating a marketplace for digital assets to trade on. The terms of the asset, including primary fees and splits on secondary sales are automatically executed (Hysell and Williams 2021). Through Zora’s protocol, an artist is able to release an asset for a certain amount of

cryptocurrency, with the artist dictating the revenue splits of any secondary sales. If the artist wants to receive 50% of all resales, they are able to bake this into the asset and have the terms automatically executed when the asset changes holders. Similar to the ticket reselling issue, this solves the problem of resellers profiting off artists' work through allowing the artist to capture value from the resell. The idea is that the NFT will appreciate in value, benefitting both the artist and the individual reselling the asset.

RAC, otherwise known as Remix Artist Collective, is an electronic dance music artist who created an NFT on the Zora protocol in the form of a cassette tape containing his album, BOY. This cassette tape can be redeemed for a physical cassette tape, or it can be traded amongst collectors as a digital asset. RAC only released 100 copies of his NFT, called \$TAPE, which was released at \$20, and each time a tape is redeemed for a physical copy the quantity drops by 1 unit (Hissong 2021). The most recent trade, as of March 2nd, 2021, traded at a value of \$6,947.31 (Zora). Although it may not make sense logically to say that a cassette tape is worth almost \$7,000, this is the price that the market has decided upon, and it has been proven that individuals are willing to buy a cassette tape for this price. RAC, speaking on this topic, said "At the time, I was like, 'Okay, \$200 for a cassette tape. Maybe that is the value of it.' If I came out and said, 'Hey guys, I'm selling a cassette for \$200,' people would be like, 'You're insane. How dare you?' But that's what the market decided." (Hissong 2021).

RAC also created his own social token, \$RAC, which he distributed amongst his network of loyal fans, also built on the Zora protocol using the Ethereum blockchain. Social tokens are representative of a community, allowing the holders access to exclusive content and various

perks which can only be obtained by the community members who own the tokens. The difference between a social token and an NFT is that a social token is fungible, meaning that each token is indistinguishable from the other and carries the same value, whereas an NFT is uniquely itself (Chou, Walden, and Dixon 2021). RAC decided, rather than sell this token, to give it away for free to this network. Currently, holders of \$RAC are able to access exclusive content, while also obtaining early access to future merchandise drops on Zora. In the future, RAC plans to continue to distribute tokens to his most loyal fanbase, while also allowing token holders to receive exclusive discounts on merchandise, unique crypto-artwork, and tokenized ad space on his Twitch channel to re-distribute some of his revenue back to his fans (Zora). The aim of this is to continue creating a loyal community amongst his fanbase and reward those who are making it possible for him to exist as an artist.

Artists have been increasingly releasing their music as NFTs, with 3LAU being one of the most successful examples of this. On February 28th, 2021, EDM artist 3LAU earned over \$11 million through selling NFTs. 3LAU released 33 unique digital assets, each redeemable for an Ultraviolet album NFT (Kay 2021). The Ultraviolet album was released in 2018, and 3LAU released this NFT to commemorate the three-year anniversary of the album, making 3LAU the first artist to sell an album as an NFT (Rapaport 2021). The top 33 bidders were placed in separate tiers with differing rewards, and the top bidder received an NFT redeemable for a custom song by 3LAU, a limited-edition Vinyl of Ultraviolet, unreleased music unlockable on 3LAU's website, and all 11 songs from the Ultraviolet album at a price point of \$3,666,666 (3LAU 2021).

On March 5th, 2021, Kings of Leon released an album as an NFT, making them the first band to ever release an album as an NFT (Hissong 2021). Kings of Leon released three types of tokens: one type is a special album package, a second type offers live show perks such as front-row seats for life, and the final package is solely used for audiovisual art (Hissong 2021). The different tiers of ownership in these pieces of work allows fans to choose where and how they would like to support, along with what they would like to receive in return. This increases the application of NFT releases through attracting different crowds, such as those who would enjoy going to a show, those who have a passion for collecting artwork, and those who want to own the music. Rather than appealing to one specific type of fan, this is more representative of the diverse nature of an artist's fanbase.

The Kings of Leon introduce an interesting subset of the music blockchain space which is the distinction of cover art and the underlying music. Artists are able to sell their music as an NFT, but the musical artist and visual artist are also able to sell the cover art to the music as an NFT, either in collaboration or separately depending on the terms of their agreement. Farris Knudsen, a cover artist for many prominent hip-hop acts including 21 Savage, Playboi Carti, Gucci Mane, and Lil Uzi Vert, recently released an unreleased version of the cover art he made for Lil Uzi Vert's 2020 album *Eternal Atake* as an NFT on Zora (Knudsen 2021). Previously, due to the highly specialized nature of cover art, the rejected pieces would be unusable, and the time spent creating these pieces would be wasted. Fans still find value in these pieces of art, and given the unreleased nature of these works they may even find more value in purchasing an NFT for the unreleased version than purchasing an NFT for the released version. Farris also went on to

release unreleased cover art for 21 Savage's album *Savage Mode* and Playboi Carti's single @ *Meh* as NFTs.

It is important to note that a musical artist and/or a visual artist can release cover art for a released project as an NFT; it does not have to be an unreleased project. In doing so, they can release the cover art as a bundle with the underlying music or as a separate offering entirely.

On February 22nd, 2021, Jacques Green sold the publishing rights in perpetuity to his song "Promise" on the platform Foundation as an NFT for 13 Ethereum Coins (the equivalent of \$19,094.14 at the time of purchase) (Greene 2021). Jacques retained the right of approval for use of the song, but the publishing royalties associated with Promise belong to the purchaser. It is important to note that in this deal the purchaser only receives the publishing royalties, whereas Jacques and his label, Lucky Me, retain ownership of the performance and master royalties (Greene 2021). This represents an interesting method of utilizing NFTs to replace functions traditionally performed by record labels and publishing companies.

A typical publishing deal would be an artist receiving an advance to offset the recording costs of a song, with these expenses being 'recoupable' for the label, meaning that until the label earns back the advance from the underlying music, the artist will not see any of this revenue. Once the expenses are recouped, the artist and publisher will typically split the publishing royalties generated from this song, and the publisher's function will be to maximize exposure and placement of the song.

Auctioning the publishing rights effectively replaces the need for a publishing deal in this scenario. Rather than receiving an advance in exchange for royalties from a song, the artist can instead just receive money directly from an individual looking to recoup the price paid via the royalties of the song. The benefit of this deal versus a typical publishing deal is that the artist retains the right to approve where and how the song is used, something that is often signed away in a traditional publishing deal. The artist is effectively able to retain full creative control, and, rather than signing away an entire catalogue, they can pick and choose the songs to release via this method.

Often, a record label will offer an artist a 360 deal, meaning that the record label profits from all revenue earned by the artist: album sales, publishing, master, and performance royalties, live performances, meet and greets, merchandise sales, etc. The record label will often have a separate publishing department, for example Sony Music and Sony Music Publishing, and the label will take care of the publishing as a condition of the deal. Historically, 360 deals have been notoriously engineered to be in the record label's favor, something that has generated much turmoil within the music industry and has been under increased scrutiny in recent years. As a business, the record label is interested in maximizing profits and hedging against any losses, and this often comes at the artists' expense. It is important to understand that with the current structure, however, it is necessary for labels to operate in this manner. They are giving the artist an advance, and at the end of the day they are not in the business of giving away money for free. The label must receive something of value in return for the advances and resources that they provide to the artist. NFTs allow the artist an alternative to these deals, which typically are not

tailored to the artist's best interests. In addition, the artist retains creative control, which is often of utmost importance to the artist.

Empowering artists with a method to receive advances in order to offset the expenses associated with recording music while circumventing the obligations and loss of creative control associated with record and publishing deals is an intriguing application of blockchain within the music space that should continue to be explored further.

These groundbreaking experiments display the level of value that consumers place on NFTs, as well as the need for further development in this area. Artists have created an entirely new revenue stream that has already demonstrated its value, and the opportunities in this space are bound strictly by imagination.

V – BARRIERS TO ADOPTION

The main barrier to adoption for blockchain within the music industry is acceptance amongst the masses within the industry. In order for this to work, all of the different players involved – the artists, publishers, distributors, record labels, CMOs, DSPs, and management organizations – must agree to adopt this technology (Hissong 2021). If only half of the parties adopt the framework, we are going to once again experience partial information and conflicting practices (Hissong 2021).

In a Rolling Stone article, Zach Katz, who co-founded YellowHeart with Adam Alpert, says, “You have 12 different revenue streams, you open up one portal, and, boom, there they all are in

real time. They're completely reliable and nobody could have messed with them. That's your entire world. But in order for that to happen, we're looking at a scenario where literally every single player within your ecosystem – your music publisher, your record label, Spotify – at one particular point, turns on the light switch and all of them jump on this one framework. That's why it's challenging.” (Hissong 2021). The only way to make this change happen right now is for every artist to be fully independent and own 100% of the rights to their music. This, obviously, is not the case, and never will be the case, so adoption will need to take both time and cooperation amongst all parties. The place to start is creators demanding that this change occurs (Hissong 2021).

Another barrier to adoption is the level of complexity involved in blockchain technology. Bitcoin was created over 10 years ago, and it still has not yet become mainstream. Many people reject the idea simply because they don't understand the fundamental concepts behind it, and the terminology coupled with the sheer number of players offering similar products in differing ways further complicates this issue. The variety of widely used cryptocurrencies prevalent in the market right now, such as Bitcoin and Ethereum, and the process to buy coins and convert them creates further confusion in the eyes of the user. The use of different blockchain currencies for different content creators would cause mass confusion among these creators' fanbases (Taghdiri 2019, 190).

This boils down to an issue with user experience. Josh Tucker, a partner at Pillsbury LLP, is quoted as saying, “Currently, user experience friction and security concerns impede adoption at the consumer level. People have a difficult time keeping their email secure, let alone digital

bearer assets accessed with novel interfaces, like blockchain tokens.” (Mire 2019). Blockchain technology is still too complex for many people, and fully understanding the underlying technology is something that takes time and patience. The technology must become more user friendly in order for widespread adoption to occur.

Energy consumption of cryptocurrencies is something that has been a prominent topic of debate recently. Proof of Work (PoW) blockchains, such as Bitcoin, validate transactions through every miner authorizing, validating, and achieving consensus on every transaction (Taghdiri 2019, 176). Although this is important for guaranteeing the security of the blockchain and eliminating the potential for double spending, similar to counterfeiting a dollar and spending it twice, this ultimately results in high energy use and carbon dioxide emissions. This practice of validating transactions is called mining, and in order to do this, miners must continually purchase and discard large computers, which can have adverse effects on the environment (HydroMiner 2018). One way to remedy this issue is to switch to Proof of Stake (PoS) rather than PoW, where mining power is granted based on the percentage of coins held by a respective miner in order to place a cap on the amount of mining power held by an individual to make excessive mining software pointless (Frankenfield 2019). This greatly reduces carbon emissions resulting from mining the cryptocurrency. As of 2020 Ethereum has begun to move towards a PoS consensus mechanism, moving away from PoW (Wackerow 2020).

This argument of power usage, however, has been simultaneously refuted by experts, just as it has been defended by other experts. Nic Carter, a partner at Castle Island Ventures, a blockchain focused venture capital fund, and author for Coindesk, makes an interesting point regarding this

debate in an open letter on Coindesk. Nic says, “Bitcoiners are forced to defend the costs of this industry while the critics enjoy an apparently conscience-free right to selectively question the energy uses of specific industries. How often do you hear about the societal merit of game consoles, clothes dryers or Christmas lights?” (Carter 2021). Why are certain uses of energy persecuted and others are not? The argument of blockchain’s energy usage is one with no right answer. The global impact of mining should be minimized, but the fact that blockchain technology is not the first industry to consume energy - and it will not be the last - must also be considered.

Experts consider the blockchain ledger to be virtually impossible to corrupt (Taghdiri 2019, 175). This is due to the decentralized nature of the technology. Whereas in a centralized system an individual would only need to get through one point of penetration to breach the security of the entire network, blockchain has thousands of computers which host the network and mitigate this risk (Taghdiri 2019, 176). In order for a hacker to fully take over the network they would have to access every single computer that the network is hosted on, which is extremely improbable. There have been instances of security breaches in blockchain technologies, however, with Ethereum Classic being one of the most notable cases. In 2019, a hacker was able to gain control of over half of the Ethereum Classic’s computing power, rewriting the transaction history and double spending the currency (Orcutt 2019). Although most security breaches have been on cryptocurrency exchanges, which are more centralized in nature, this attack on Ethereum Classic proves that decentralized cryptocurrencies are not immune to security breaches.

The concept of one singular music copyright database has been previously attempted - by the Global Repertoire Database (GRD) - and failed. The GRD was initiated by the European Union and was composed of a far reaching group of participants including Apple, Amazon, Google, and various CMOs and publishers, however, the burden of expenses was borne by only a handful of CMOs, ultimately resulting in the GRD's demise (Music Business Worldwide 2015). In order for the GRD to function, it was necessary to enlist a wide range of participants, which it successfully accomplished, but the feat was ultimately unable to be pulled off. The combination of insufficient funding and information along with the potential threat of eliminating the need for the CMOs which created this database was the burden which took down the GRD (Milosec 2015). The potential reasons for the GRD's failure cited by Milosec's are (1) the issue of who would retain the right to control and administer the GRD catalogue upon completion, (2) the fear of collection societies of lost revenue from operational costs under a more efficient GRD system, (3) the lack of a function for CMOs with the presence of the GRD in a system where publishers would license songs directly without the need for intermediaries such as a CMO, (4) the ability to provide consistent information amongst different providers, and (5) technical and legal barriers in the European Union where each country has a distinct CMO that operates slightly different than American CMOs (Milosec 2015).

The GRD would have solved many of the issues regarding copyright management in the music industry, but in order to do so it needed the collaboration of the CMOs, and in the end the CMOs decided to block this project to keep their business. The GRD threatened the livelihood of the CMOs, and they should not be blamed for acting in this way. At the end of the day, the goal of a business is to stay in business, and the GRD's mere existence would have threatened the CMOs

ability to continue operations. In addition, the differing function and representation of CMOs from country to country further complicates this issue. The GRD experiment proves that creation of a singular copyright database is not impossible, but it will not be easy by any means.

Governance, regulation, and integrity pose some of the most pertinent challenges for the widespread acceptance of blockchain technology (O'Dair et. al 2019, 18). Middlesex University's research report, *Music on the Blockchain*, states that, "[g]overnance and regulation could have consequences for the integrity of the data, given the obvious danger of entering erroneous information onto an immutable ledger." (O'Dair et. al 2019, 18). It is important that blockchains continue to stay decentralized in order to preserve the integrity of these technologies, as doing so minimizes the opportunity for data to be tampered with.

VI – CONCLUSION

It is viable to predict that blockchain will transform the music industry in the areas of copyright tracking, accurate and timely payouts of royalties, DSPs, tracking revenue streams, ticket selling and reselling, NFT releases representing albums and singles, contract formation amongst artists and intermediaries, social tokens representing artist communities, and ownership of intellectual property, as these areas have already begun to develop. However, to say this is the extent of blockchain's application within the music industry is limiting. The full extent of blockchain's potential is confined solely to the boundaries of the creator's imagination. The most exciting aspect of blockchain technology is that it is developing with us - it does not look nearly the same as it looked 10 years ago, and nobody knows for sure what it will look like 10 years from now. We are in charge of dictating where this technology goes from here.

Although blockchain has incredible potential within the music industry, we may not yet be fully ready for its adoption, and conversely, it may not be fully ready for our adoption. There are still aspects of the technology which are not fully developed and still have issues. These problems must be addressed and fixed in order for this technology to realize its potential and experience mainstream approval.

It is unlikely that all of the traditional roles within the industry - labels, publishers, distributors, CMOs, PROs, lawyers, managers - will become fully obsolete, but if this change occurs it is likely these entities will serve different purposes. Similar to how during the digital revolution, the role of a record label transitioned from selling physical copies of an artist's records to selling an artist's entire brand, it is likely that this trend of repurposing will happen again in alignment with the implementation of blockchain technology into the industry. The most important notion that needs to happen in order for blockchain to be adopted and legitimized within the industry is for the widespread adoption of the technology. In order for this to happen, the artists must band together and incite a revolution to ensure that this happens.

Cryptocurrencies and blockchain technology as a whole have been forcing their way into mainstream media as the need for this technology increases amongst various industries and functions. The hardest thing to do is wait, but in order to create a wave you must begin with a ripple. As more and more artists push for adoption and spread the ideology, more and more gatekeepers will listen, and the objective is that eventually we will reach a tipping point where this technology becomes impossible to continue to ignore.

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