Audio Non-Fungible Tokens

Subjects: Others
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Crypto, non-fungible tokens (NFTs), and the metaverse have taken a massive place in people's daily conversations and are highly valued. Moreover, NFTs range from luxury fashion to art, and sound is no exception, although it still needs to be explored.

non-fungible tokens marketplaces cryptocurrency defi audio music sound

1. An Audio-Driven Revolution in the Digital Communication Ecosystem

For several years, the image was the main protagonist of the communicative ecosystem. The visual dimension was gaining importance, even before the expansion of the Internet, to become, through its potentialities, dominant over the other modes of communication. We also verified that “inside the Internet, we find a rhetoric that is scathingly based on visual culture, a culture that is founded on simplicity, speed and emotions where ‘seeing is enough to be’ and where repeat is inform (Ramonet 1999)” [1] (p. 36).

However, suppose the media ecosystem was built, for several years, around rhetoric dominated by the visual component. In that case, we cannot ignore the changes that have been verified in recent years, namely the growth of the importance of audio.

Although we still live in a society dominated by screens, we also see fatigue [2], which turned out to be one of the reasons why audio and voice gained renewed importance. Nevertheless, this is just one reason that helps explain the paradigm shift that we have seen in the communicative ecosystem. After all, consumption habits themselves have explained the importance that sound and voice have gained. The consumption and production of podcasts, the growth of smart speakers, the development of voice-controlled wearable technology, and the increase of voice-automated searches are just some of the trends in recent years that have shown how voice and audio have become central in the communication environment [2][3][4][5][6][7][8]. In this context, “the exponential multiplication of interconnected audio devices with tens of thousands of devices of all kinds, Artificial Intelligence and the maturation of a multiplicity of technologies associated with voice and sound have produced the phenomenon called Voice First” [2] (pp. 4–5).

Suppose it is true that several factors contributed to voice and audio becoming protagonists in the media ecosystem. In such a case, some contributed more significantly to this paradigm shift. One of the main factors responsible for the importance that audio has gained is podcasts, with some authors speaking of a ‘Golden Age’ of podcasting [9], while others refer to an “Audio Media Revolution” [10].

Whichever expression we use, the objective is the same, to highlight how podcasts became popular and contributed decisively to the growth of sound streaming platforms, placing sound as one of the main communicative trends in recent years [11]. However, it is also important to remember that the growth in importance of podcasts was gradual, that is, it was mainly from 2014 “with Apple’s inclusion of a built-in podcasting app on every iPhone” [10] (p. 1). Later that year, with the launch of the podcast ‘Serial’ (This American Life, 2014–2018), we witnessed a proper consolidation of this “(…) creative medium distinct from radio, with its own unique modes of not just dissemination but also production, listening, and engagement” [10] (p. 2).

In this period, which some authors call the ‘Second Age of Podcasting’ [12], we see not only a growth in the consumption of podcasts but also in the production itself [3][4][5][6][7]. In addition, we see a greater interest in companies and brands [4][13] without forgetting the scientific research on sound content itself, which has multiplied [8][14].

In addition to the aforementioned reports, and the more comprehensive works on the revolution introduced by podcasts in the media ecosystem [8][10][15], the researchers found that many studies began to analyse podcasts as a radio remediation strategy [16][17][18][19][20][21][22]; the opportunities that podcasts have brought to journalism [23][24][25][26]; podcast consumption trends by different audiences [11][27][28][29][30][31][32][33]; the influence of the pandemic on the production and consumption of podcasts [34][35][36][37]; the use of podcasts in different areas of expertise [38][39][40][41][42]; and the new possibilities of immersion introduced by technology through podcasts [43][44].

The researchers are not to make a systematic review of studies carried out on podcasts. They highlight only a few examples from different perspectives in the Portuguese, Brazilian, and Spanish contexts, thus demonstrating that much of the growth of the importance of the sound ecosystem is due to podcasts.

However, the researchers can verify that few works address the issue of audio business models in general and podcasts in particular. Perhaps the main reason is that podcasts have consolidated themselves as a DYI medium, both in terms of production and communication and dissemination [11][14].

Thus, suppose that “the podcast is one of the media sectors most conducive to entrepreneurship and individual initiative” [16] (p. 5). The researchers must also consider that with its growth and the entry on the scene of new actors, namely the large distribution platforms, new challenges arose. Platformization emerges as one of the biggest since “the tendency for media to be located on platforms that media makers do not control has had profound effects on the business” [45] (p. 1689). If democratisation in production and consumption has always been a distinctive element of podcasts, the use of platforms raises new questions regarding the nature of podcasts themselves. Since “even though podcasting is built upon the open architecture of RSS, commercial pressures and the desire of market players to capitalize on the “winner-take-all” features of platforms are shaping the trajectory of the medium’s current development” [46] (p. 1). In this context, issues related to authorship and monetisation gain relevance in a discussion “between the free essence that has always characterised the medium and the necessary subjection to metrics, models and other constraints dictated by advertisers” [16] (p. 6). Thus, in this direct distribution and digitisation context, platforms such as Patreon or Twitch have been used as facilitators for creators to engage directly with their audience and grow their visibility online [47]. From artists to podcasters, these platforms are now widely used as a complementary source of income and communication.

The researchers aim to highlight the importance of podcasts and the expected growth for this medium in the coming years [48]. Moreover, they expect to showcase a set of other trends in terms of digital audio communication [13] and the need to think about monetisation and the best strategies to give power back to content creators. Therefore, they consider it necessary to reflect on the potential of NFTs to offer producers a new medium to present and market their work on the blockchain through non-fungible token (NFT) marketplaces, thus allowing creators to control the supply chain and rights associated with their work.

Arenal et al. highlight that “previous research has mainly focused on the examination of the business models of streaming services from the point of view of the innovation players (digital platforms) and/or the traditional dominant intermediaries (record labels and publishers). However, not all innovation-driven transformations are sustainable” [49] (p. 1). Through qualitative research, the authors “(…) conclude that DMSPs foster an asymmetric value chain in which the creative players barely capture value while technology-based innovations increase the capability of DMSPs to generate and capture value” [49] (pp. 1–2).

This is precisely the dimension that this research explores in the possible avenues that can be considered for audio content creation and distribution in terms of business models, transactions, and ownership.

2. NFTs: An Introduction

As the concept of non-fungible tokens (NFTs) continues to grow, it seems essential to define a simple concept. Therefore, the researchers will line up some of the most used definitions. Per Shahriar and Hayawi: “NFTs are cryptographic tokens that were initially built on the Ethereum blockchain but more recently adapted by other blockchains […] NFTs are different from fungible tokens like Bitcoins, where each token is similar in value to the other ones and can easily be swapped. The non-fungible aspect of NFTs ensures that each token is unique and consequently provides the holder with ownership rights over a digital asset” [50] (p. 2).

This definition encompasses the dimensions of value and exchange, which are very important in the definition of NFTs, although often overlooked. The value that the token encompasses depends on several factors such as its ownership, more than the artefact itself, as explained by Shilina: “A token as a unit of account is a record in a distributed blockchain and is controlled by a computer algorithm of a smart contract, in which the values of the balances on the accounts of token holders are recorded, making it possible to transfer them from one wallet to another. Non-fungible tokens were originally created as special token standards to support the use of blockchain in computer games, which include the Ethereum ERC-721 standard (which is representing non-fungible digital assets) and the more recent ERC-1155 standard (which offers ‘semi-fungibility’)” [51][52]. What appears to be also harder to grasp for a majority of consumers is the difference between NFTs and cryptocurrencies. According to Wang: “Bitcoin is a standard coin in which all the coins are equivalent and indistinguishable. In contrast, NFT is unique which cannot be exchanged like-for-like (equivalently, non-fungible), making it suitable for identifying something or someone in a unique way. To be specific, by using NFTs on smart contracts (in Ethereum), a creator can easily prove the existence and ownership of digital assets in the form of videos, images, arts, event tickets, etc.” [53] (p. 2).

Moreover, crypto-collectibles are relevant because of the unique value they are subjected to, according to Chevet: “like art pieces stored on a blockchain, any form of data, (image, text, sound), that is uniquely identified by a blockchain. Unlike cryptocurrencies which are fungible, meaning that any Bitcoin is equivalent in value to any other Bitcoin, just like a dollar is equivalent to any other dollar, non-fungible assets are unique and differentiated from one another” [54] (p. 5). The amount of information and traceability and interoperability allowed in such transactions is also what makes NFTs a soon-to-be preferred option for IP protection [53]. However, the authors also note that: “NFTs represent little more than code, but the codes to a buyer have ascribed value when considering its comparative scarcity as a digital object” [53] (p. 2).

Furthermore, NFTs allow acquirers to prove they own a unique item and that they are the sole possessor of such an item [55], which is quite relevant in the creative industries.

However, NFTs also have a gaming dimension. Like movie or gaming figurine collectors, they have become a digital phenomenon for those who have already adopted lifestyles based on passions such as anime, comic books, or video games, becoming more and more open to the creative arts. According to Jiménez: “Non-Fungible Tokens (NFTs) are digital assets that represent objects like art, collectibles, and in-game items. They are traded online, often with cryptocurrency, and are generally encoded within smart contracts on a blockchain” [56] (p. 3).

To this definition, the author also adds the physical dimensions of such tokens: “A non-fungible token (NFT) is a type of cryptographic token on a blockchain that represents a unique asset. These can either be entirely digital assets or tokenised versions of real-world assets. As NFTs are not interchangeable with each other, they may function as proof of authenticity and ownership within the digital realm” [56] (p. 4).

This last aspect of the nature of NFTs has been exploited, especially in the fashion industry, namely through RTFKT’s footwear drops and, perhaps most famously, the Cybersneaker [57]. Therefore, in this research, the researchers understand NFTs’ most straightforward nature: unique digital assets that can be acquired, collected, and traded. With the emergence of NFTs in the past few years, especially following the digital revolution experienced during the pandemic, the researchers will now look into this phenomenon through creative and communicative perspectives.

Rauman defines NFTs as a “nascent technology that operates as digital assets representing both tangible and intangible items of value” [58] (p. 10). It is important to note that, although the terms are used interchangeably, fungible assets, such as bitcoin or dollars, are very different from non-fungible assets. Bradley poses that “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” [58] (p. 10).

NFTs can also allow creators to grow in different markets and engage directly with consumers, followers, and fans, but also to trace ownership and revenue through tracking royalties. Per Folgieri et al., these contracts can also allow for a concise yet approachable way to look at the problem of ownership of content creators: “also known as digital contracts or, according to the Ethereum naming convention, smart contracts, are blockchain-based digital signatures used to authenticate digital assets. The simplest approach consists in transferring the ownership of the composition via NFT and keeping the royalties as the author” [47] (p. 63).

There is also the question of the dematerialisation of property and intellectual claims through NFTs. For Sestino et al., this is why NFTs are neither products nor services but something else in the middle. According to the authors: “Unlike services, however, NFTs do not require the owner’s direct participation, a large skilled workforce, or even a specific physical location to be consumed. Unlike products, one cannot easily flaunt NFTs in the same way as a sports car or jewellery, especially outside of virtual environments” [55] (p. 5). This is all the more relevant since the creator’s economy referenced earlier is also interested in the possible interactions and traceability of NFTs. Moreover, for many creators, going all digital is already a reality.

3. The Emergence of NFTs

The first known NFT, Kevin McCoy’s ‘Quantum’ created in 2014, was sold seven years later in 2021 for USD 1.4 million at a Sotheby’s auction, showing the world that NFTs were officially acknowledged by ‘traditional’ art auctions around the world. Although McCoy’s NFT is often referred to as the first one, another happening a year prior is also recognised as a maker of the history of NFTs. The coloured coins, appearing in 2012, marked a transition in how data was carried through bitcoins, as per Crypto Dukedom: “The functioning of coloured coins was not very different from non-fungible tokens as the researchers know them: their purpose is to represent a multitude of resources within metadata. The main reason why coloured coins were invented is to open the door to developing new features in Bitcoin. The ability to create tokens linked to things in the real world and for these to be supported by a blockchain network presented a unique opportunity” [59] (p. 15).

Cryptokitties is another historical and relevant element to mention when speaking about the emergence of crypto-collectibles: “A collection of artistic images representing virtual cats that are used in a game on Ethereum that allows players to purchase, collect, breed, and sell them on Ethereum. In December 2017, CryptoKitties congested the Ethereum network. By many considered a chief example of the irrationality driving the cryptocurrency market in 2017, CryptoKitties remained the only popular example of NFTs for almost 2 years” [60] (p. 1).

Since these first steps, NFTs have become very desirable, especially in the last few years, with recent sales, such as Christie’s March 2021 auction, where ‘Beeple’, the higher priced transaction of the kind, totalled USD 69 million [60][61][62][63]. Moreover, according to Charter and Davis: “Blockchain has also leapt forward with respected organisations such as Sotheby’s acknowledging that NFT marketplaces are here to stay. Two years ago, these marketplaces were viewed as niche, but they have seen huge transaction growth in the last year: for example, between October 2020 and March 2021, transaction volume on the OpenSea NFT marketplace (the largest) has grown over 100 times” [64] (p. 17).

The year 2020 saw an emergence of NFTs’ distribution and offerings, with the market growing exponentially to attain “10 million US dollars in March 2021, thus becoming 150 times larger than it was 8 months earlier” [60] (p. 2).

The concept of NFTs’ relevance has been hard to grasp and continues to baffle many others about the actual emotional value of owning a non-fungible token that is entirely digital [65]. According to Crypto Dukedom, NFTs stand in this often-paradoxical limbo that can be explained by the value each subject attributes to something, not the object itself: “Therefore, the value is not something intrinsic to the product. It is not one of its properties, but simply the importance that the researchers attribute to the satisfaction of our needs in relation to our life and our well-being” [59] (p. 22).

However, there is still a lot to unpack for many about the potential of NFTs for the creative industries, especially within the technicalities of the NFTs themselves, as observed by Patrickson: “NFTs can be bought and sold at any stage before, during or after a creative process. Ownership can also be divided into more liquid micro-shares to make expensive works and collective sponsorship options more accessible. This sort of asset is a complicated notion, nevertheless, because NFT registration does not include the right to own proprietary visual elements, and the image can still generally be copied. The key point for collectors is that only registered owners have the right to trade that file" [66] (p. 587).

In this sense, the market is highly determinant in the emergence of NFTs because the main target is the early adopters of this new craze, tech-savvy GenZ and GenY males [67]. An insight report by the Business of Fashion states that 65% of US GenX and GenY consumers value digital ownership as important [68].

Moreover, the market that has perhaps most explored NFTs is gaming [60], with a high dissemination of crypto-collectibles among online gaming platforms [69]. However, in the past two years, the creative industries have taken a double look at NFTs, taking them more seriously as a business opportunity. Creators regard NFTs as a possible way to mark and track their work, and how they earn revenue can also be organised and more transparent [58] and creates a more direct-to-consumer approach than ever.

4. Markets Explored with NFTs in the Creative Industries

As pointed out by many studies, technologies and the digital paradigm our societies face have taken many forms. Creative industries have adopted many digital trends and new avenues to disseminate, communicate, and create. Technologies have been used in many situations to revamp media or adapt to consumers' needs, such as podcasts or digital garments for fashion [38][67]. Nevertheless, one of the main game-changing aspects of embedding technologies into creative industries is for the creators themselves, who do not necessarily need intermediaries to reach their customers [51]. This is a noticeable opportunity with the emergence of industry 4.0 and the pandemic years [64].

According to Rauman: "Any individual who creates content to be consumed is a player in the creator economy. YouTubers, graphic designers, Instagram or TikTok influencers who monetise 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" [58] (p. 3).

This is also the case for any content creator, as other artists have widely explored NFTs, whether familiar with the technology or not. For smaller-scale creators, this also means increasing their revenues by cutting the shareholders to a minimum [13]. Furthermore, for content creators, this model also represents a new drive for the ecosystem of creators and the community based on this economic system, where creators and consumers can interact but also act as both parties [58]. This paradigm shift is also evident in transactions, where third parties such as alternative digital banking and payment solutions such as PayPal are no longer needed [58]. NFTs have quickly become an all-stop solution, at least conceptually, to shift the intellectual property paradigm of creatives. According to Sestino et al. "the *momentum* is driven mainly by three factors: the opportunity for creators to exercise and transmit the rights associated with such items; the possibility for users to boast about owning such objects; and the facilitation of marketing and advertising strategies that can leverage such items' uniqueness" [55] (p. 13).

Crypto-collectables, like non-digital assets explored in traditional creative industries, are most predominantly organised and proposed in collections of items [60], which is also the case in fashion. Therefore, the match made between NFTs and fashion is not farfetched. From NFTs to D2A (Direct-to-Avatar) business models and digital clothing for unique social media content, fashion can be considered one of the early adopters of these new digital trends.

For fashion, surfing on the NFT trend has come through the gaming industry [67], with partnerships between gaming companies and fashion brands, such as Roblox and Vans, or more famously, Fortnite and Balenciaga [68]. Moreover, sportswear giants such as Adidas or Nike have also understood the value of going all-in with NFTs; an example is Nike's recent acquisition of crypto and digital content creator studio RTFKT [70].

With approximately 70% of US GenZ and GenX consumers declaring their digital identity as necessary [68], the fashion industry has quickly adapted to this new medium, tackling more than just gamers and the tech-savvy youth [51], but also luxury consumers, with brands such as Prada or Louis Vuitton [71][72]. However, the future of fashion NFTs is still unsure, as target markets are somehow incompatible; from one side, there is a women-driven market, and on the other, there is a more man-oriented, early adopter type market [73]. Moreover, the issues with intellectual property and risks of NFTs are often used by sceptics [74][75][76].

Nevertheless, crypto-collectibles are now deemed attractive by individual creative artists, as per Charter and Davis: “Artists and creators recognising that digital art and goods are a viable revenue stream (e.g., digital premieres, avatars and digital fashion, unique goods on NFT marketplaces etc.)” [64] (p. 7). This is explained by the fact that common distribution channels for artists are scarce and highly dependent on the interest of the masses. According to Wang et al.: “NFTs transform their work into digital formats with integrated identities. Artists do not have to transfer ownership and contents to agents. This provides them impetus with lots of profits” [53] (p. 12).

Nevertheless, if many creative industries have already dabbled into NFTs and music is no stranger to the craze, little has been explored in scientific research around the theme of audio NFTs [51]. Therefore, it seems valid to look at the diverse ways in which audio content can be distributed through NFTs to add more opportunities for digital audio communication. The pandemic has also accelerated the process of a more direct-to-consumer approach from creators. According to Bradley: “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 departure of live music” [58] (p. 6).

Thus, it is fair to say that NFTs already appear to be an appealing solution for creators in this approach to new markets and new approaches to digitised business models and direct distribution. It is, therefore, envisioned that audio content, such as podcasts, music, and audio streaming, could also follow in this direction.

5. NFT and Digital Audio Communication: A Path to Be Traced Together?

In 2019, Deloitte predicted that “the global audiobook market will grow by 25 per cent to US$3.5 billion. And audiobooks aren’t the only audio format gaining in popularity. Also predicting that the global podcasting market will increase by 30 per cent to reach US$1.1 billion in 2020, surpassing the US$1 billion mark for the first time” [36] (p. 106).

The digital audio ecosystem has been growing considerably. The consultant believes “audiobooks and podcasts are outgrowing their ‘niche’ status to emerge as substantive markets in their own right” [48] (p. 107).

Suppose it is true that “the expected growth in audiobooks and podcasts is part of a larger trend of better-than-you-might-think growth in audio overall” [48] (p. 108). In that case, the researchers cannot forget that it has never been so important as it is today to discuss the business models that best apply to sound. In this context, the consultant understands that, although “podcasts could be a US$3.3 billion-plus business by 2025” [48] (p. 109), it is essential to start thinking about new ways of monetising sound content.

If the researchers take the case of podcasts as an example, although the medium has been around for some time, it was only since 2014, and due primarily to the success of “Serial”, that this content began to reach more audiences and attract more audience sponsors. Let's think of another type of audio content. The situation is not very different insofar as, despite being increasingly consumed, this increase does not typically translate into income for its producers. The reason is simple, as in the case of podcasts, much of this content is available for free. Suppose the production of audio content has been considerably simplified over time, and today it is straightforward for anyone to produce the most varied types of content. In that case, the truth is that this DIY logic also constitutes a challenge in terms of monetisation. “So long as people can listen to thousands of hours of high-quality podcasts essentially for free, profit-motivated podcasters will have a hard time getting listeners to actually pay for content” [48] (p. 110).

Therefore, the question is how to monetise the produced content efficiently. However, many variables are associated with this issue, such as copying or sharing without permission. While the “Internet has granted all of us access to limitless content”, the truth is that “all types of digital media can be easily shared and replicated, with or without the permission of content creators”. Thus, “this digital abundance of data and the way it was distributed over the internet, it was always an issue for content creators, as their work could be copied and shared without approval and remuneration” [77] (p. 27).

In this context, the researchers understand it is necessary to explore the potential introduced by NFTs in areas such as art or games, as they did in the previous point, to think about their application in the area of digital audio. In the case of music, there is still much to explore. However, the first steps have already been taken, with artists such as 3LAU, Grimes, and Deadmau5 defying music distribution and merchandising by approaching the public in a new way. Blockchain technology has clearly imposed itself as a relevant opportunity for the music industry, as well as other creative industries [58].

Among the many benefits that the adoption of NFTs can generate, the researchers can highlight, on the one hand, the ease of "the exchange of music rights and creating a public record of ownership that can be used to resolve overlapping royalty claims" and, on the other hand, the possibilities of "opening the music rights market to the general public", allowing "fans to invest in their copyrights directly", without forgetting the "new ways to monetize music", since "most NFTs marketplaces automatically pay out royalties to the creators whenever the NFTs are bought and sold" [78]. Furthermore, Rauman poses that "Blockchain's core technology, which enables smart contracts and non-fungible tokens (NFTs), could be used to restructure and decentralise the music industry to be in alignment with the best interests of artists—the individuals responsible for driving the success of this industry" [58] (p. 1).

Despite this potential, the researchers are aware that there are still several significant challenges concerning non-fungible tokens, especially because "NFTs are new, there is limited information on how existing laws and regulations apply to NFTs" [79] (p. 4). However, the researchers cannot forget that "for the first time, content on the internet in the form of an NFT can be definitively owned by a specific person independent of a centralized intermediary, and this is unlocking exciting opportunities for digital commerce and engagement" [79] (p. 4). Nevertheless, the market is ultimately the decisive agent in innovative business models, which will be the case for audio NFTs as well. According to Lee: "Critics might respond that NFTs are different from other consumer items because they are virtual abstractions of something else. That is true to some extent, but the researchers have no shortage of financial contracts and instruments that are abstractions of something else. A stock is an abstract ownership interest in a company" [80] (p. 53).

Thus, if "the music industry alone seems to be presenting the most illuminating litmus test for how blockchain technology could facilitate co-creation and co-ownership of intellectual property" [81], can the researchers think of new opportunities for the entire digital audio ecosystem? It is precisely this path that they try to explore in this research. The evolution from Web2 to Web3 has allowed for many solutions for the music industry [82]. This new model allows creators to be at the core of their craft and decide of their own distribution. Moreover, according to Behal: "In Web2, profits and stock prices influenced most companies more than helping small creators who were publishing content. In other words, by creating a platform for artists to publish their music, Web2 companies could profit massively and not pay artists as much as they should have" [82] (pp. 2–3). This also implies that the whole industry could potentially shift with more direct access to content with niche artists and creators. Per Behal: "if there was a Web3 music streaming platform, they could create a free-to-mint NFT that users could receive by listening to music from artists with less than 10,000 followers or artists with less than 1,000,000 total music streams. This way, artists would be able to receive more listens in a period of time, potentially have more people follow them and join their community, and receive more money due to this event" [82] (p. 4).

As Shara Senderoff, Partner and President at music/tech investment firm Raised in Space, highlights: "Long term, NFTs and the idea of digital collectibles are very much here to stay. They represent an incredibly promising and important new revenue stream, for artists and for the music industry as a whole (…) We're very much in the infancy of what digital collectibles and the tech that allows them to exist will become" [83] (p. 31).

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