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Disruption as Contingency: Music, Blockchain, Wtf?

Matthew Lovett

Abstract

The “disruptive” effect of emergent technologies has come to signify the promise of a better world, fuelled by unforeseen efficiencies in production and business; thus, the digital strategist Don Tapscott’s enthusiasm that blockchain, a quintessentially disruptive technology, will “make it rain” (Tapscott, 2016) for musical creatives, by increasing revenue from digital content.

This chapter will draw on Joshua Gans’ *The Disruption Dilemma*, which discusses disruption in terms of market ecosystems, and *After Finitude*, where Quentin Meillassoux formulates a new paradigm for addressing the contingency that underpins human knowledge, and thereby offers a reconfiguration of disruption as a fundamentally contingent force.

Introduction

In his 2016 TED talk, “How the blockchain is changing money and business”, the digital strategist Don Tapscott suggested that “it’s going to rain on the blockchain for digital content creators” (Tapscott, 2016). Part of the talk focused on the idea that new, so-called, “friction-free” transactions will mean that more revenue will go to artists as a result of people accessing digital content via a blockchain-enhanced music distribution and delivery system. Whilst in theory it may very well be the case that artists could - and even should - see a greater share of the revenue generated by their creative works, it is far from certain that such a system would only serve to recoup value that had been lost in the distribution chain.

My aim with this chapter, therefore, is to use blockchain technology as a means of articulating one of the most current and dynamic developments in what is a long-running debate about the relationship between evolving technologies and music economies, namely the relation between an evolving music economy and the increasingly ubiquitous concept of “disruptive technologies”.

Clearly, the internet as an emergent technology, has forced huge changes in conventional practices surrounding the production, distribution and consumption of music, and in this regard, we could well understand it to be the epitome of a disruptive technologyⁱ. However, what is interesting, is the current vogue for using the word “disruption” as a by-word for positive, and possibly necessary, change within a given production or service environment. It could be said that there is a certain duplicitousness at work here, or at least something of an occlusion of what the word disruption actually means. Thus, the secondary aim of the chapter is to draw on recent debates that have arisen in speculative and materialist philosophy about the concept of “contingency” in order to consider disruption as a contemporary manifestation of contingency at work within the music economy.

Initially, I shall discuss a set of developments relating to blockchain technology in order to generate a framework for considering music economies in relation to technology and consider some of the more obvious consequences for music production, distribution and consumption patterns that could result from a widespread adoption of that blockchain technology.

Clearly, an appetite for change and transformation is part of the current enthusiasm for disruption, and as such, the second part of the chapter will focus in more detail about on certain definitions and perspectives on the term disruptive technologies itself. As a result, we shall then have an opportunity to consider how blockchain could be considered a disruptive technology itself in relation to the music ecosystem.

Finally, whilst I remain suspicious of the way in which disruption has come to be increasingly weaponised in the service of what, at least on the surface, appears to be a form of Silicon Valley-style self-aggrandisement, my intention is to provide more than simply a left-leaning academic riposte to this neoliberalist co-option of the term, wherein Adam Smith’s invisible guiding and self-correcting hand of the market is subtly replaced by the invisible hand of technology. Instead, I shall present a set of philosophical perspectives that will allow us to reconfigure disruption within a context of necessary contingency so as to generate a more concrete and substantial questioning of the sense of “disruption as positive progress” that is becoming increasingly ubiquitous.

In terms of the “wtf” in the title, a central idea and question that runs throughout this chapter is a thinking through what blockchain, as a disruptive technology, is doing, or might do, to music. Will it bring improvements? Or will bring something more complex, and less resolved? Of course, it is easy to say that “disrupting” does not necessarily mean the same thing as “improving”, but by holding disruption up against a 21st century philosophical modelling of contingency, it is my intention to at least root our current sense of uncertainty about the future of music commerce in something more fundamental than simply our response to a rapidly evolving technosphere.

An evolving music ecosystem and blockchain

During its short life, the twenty-first century has so far been witness to a series of paradigm shifts as regards the production, consumption and distribution of music; notably the pervasive digitisation of music formats, and the ever-accelerating move away from music ownership towards music streaming.ⁱⁱ For our current purposes, it is possible to identify a set of developments that have occurred within the music ecosystem, that have resulted from technological innovation. They include the following: the “Sharing Economy”ⁱⁱⁱ, which largely consists of amateur makers and producers, making digital content for fun or hobby purposes, and who are happy to give away the results of their labour for free; “mass innovation”, or what the technology writer and business advisor Charles Leadbeater referred to as “We-think”^{iv}, a phrase that is intended to convey the way in which people increasingly began to use the web as a co-production platform in order to make things together; the increasing challenge posed to music as linear, or fixed product, by a range of other, more open-ended media forms and experiences (for example, games and YouTube tutorials^v); and of course the more widespread conversation that focuses on ownership vs. rental, or in digital terms, downloading vs. streaming.

As with the shift from Web 1.0 to Web 2.0, wherein Web 1.0 seemed to merely extend existing consumption or purchasing habits by making them more convenient, whilst web 2.0 fundamentally changed human behaviour and ushered in new paradigms in terms of mass communication, distribution and collaboration, streaming services have brought seismic change to online music practices and culture. In the recent book, *Platform Capitalism*, Nick Srnicek suggests that applications such as Spotify, which was launched in 2008, are a certain kind of platform - a “product platform” - which for Srnicek is a means to understand the way in which “companies attempt to recuperate the tendency to zero marginal costs in some goods,” and he describes how “the music industry has been revived in recent years by platforms (Spotify, Pandora) [...] that siphon off fees from music listeners, record labels, and advertisers alike” (Srnicek, 2017: 71-72). This is to say that, from Spotify’s perspective, enabling users to listen to music has increasingly become only one aspect of the service and experience that it provides. Whilst streaming music is clearly the core business, Spotify’s modus operandi is more nuanced and complex, and as the company has evolved, new kinds of scenes and in-platform (as opposed to simply “online”) communities have developed as a significant by-product of their streaming service. Thus, Spotify-as-platform is an indication of the more exponential effect that emergent technology has had on music commerce, such that the difference in culture is more pervasive than simply the difference between downloading and streaming music, as evidenced in the impact on listener behaviour and the growth of participatory digital music cultures.

When Bitcoin - probably the most well-known digital “cryptocurrency” - was first introduced by its anonymous creator, Satoshi Nakamoto in his 2008 “Bitcoin Whitepaper”, blockchain, the technology that provided Bitcoin’s functionality, entered a world where an already dynamic music ecosystem was in a process of volatile evolution.

In the context of this wave of technology-induced change and development, we can focus on the idea (or the promise) that Tapscott alludes to, which is that blockchain represents a new, and seemingly tamper-proof, way of protecting rights, as a result of its distributed ledger technology.

At its root, blockchain technology is fundamentally a means by which digital content can be indelibly or “immutably” watermarked. What facilitates this immutability is the fact that a blockchain operates as a distributed ledger, which is to say that any transaction that is registered on a blockchain - which we could think of as a network of thousands of computers ^{vi} - is simultaneously registered on however many thousands or millions of machines that make up that network. This network is decentralised, meaning that no one computer either controls the network, and neither are transactions registered and stored on a central server. This is the reason that, in theory, blockchain-based transactions are, or at least should be, unhackable and immutable: the only way to change, or tamper with the provenance of a digital record within a blockchain would be to simultaneously alter ‘the entire history of commerce on that blockchain’ - in other words, every single computer on that network - which, as Tapscott reports, is “tough to do” (Tapscott, 2016).

As a result of this new-found way to protect rights, a potential step-change that blockchain could facilitate, is a future music economy that again creates and redistributes value for digital content, which, after an internet revolution that has so far led to a haemorrhaging of revenue out of traditional music markets, is clearly alluring for early-adopters and enthusiastic proponents of blockchain technology.

Decentralisation is thus a fundamental component of the Bitcoin-Blockchain paradigm, because it tells us that no single computer, or a single agency that might own that computer, can control, manipulate or shut down a decentralised network. Such a network will continue to exist even if various computers on that network (or nodes) blink in and out of existence. A block thus comprises a set of transactions that have been validated by peers on a network, and a blockchain, which is a linked chain of these blocks, shared across the network, contains the entire and immutable history of all the transactions made on that network. In this regard, blockchain technology is a way of re-thinking how content can be hosted on the internet, where, rather than thinking in terms of music being hosted on a server, we can instead think of digital content being hosted on a blockchain, where rights can be protected in this new, immutable, manner.

Whilst this chapter is not intended to be an exhaustive account of blockchain functionality, it is also worth reflecting briefly on smart contracts, which, as a subsidiary function of blockchain technology, also feature heavily in the image of the brave new world of digital commerce. In its most basic form, a smart contract is a means by which ownership of an artefact can be transferred. To an extent, it could be said that a vending machine operates on a smart contract principle: a customer inserts the right amount of money into a coin slot and the machine presents them with a cup of coffee. If the customer inserts too little money, then the machine is able to recognise that there are

insufficient funds to execute the contract, which results in no drink being delivered. According to Siraj Raval, "A smart contract is a piece of code that lives in a blockchain" (Raval, 2016: 7), which is to say that, within the context of blockchain, the principles of smart contracting remain similar to those of our vending machine, although the contracts themselves have become increasingly complex.

The music 'think and do tank" (Mycelia, 2017), Mycelia, founded by the musician Imogen Heap, in collaboration with the blockchain-based music start-up Ujo, developed a proof of concept model in 2015, wherein every contributor to a musical track could be properly credited and reimbursed for their efforts. The track *Tiny Human*, released by Ujo, used different payment scales depending on whether a customer was intending to use the track for private or commercial use, and then made use of smart contracting in order to ensure that payments were equitably and rapidly distributed. In this regard, a smart contract is therefore an automated tool for managing transactions, that works by implementing the terms of a contract. In a 2014 article entitled, "What Are Smart Contracts? Cryptocurrency's Killer App", Jay Cassano wrote,

At core, these automated contracts work like any other computer program's if-then statements. They just happen to be doing it in a way that interacts with real-world assets. When a pre-programmed condition is triggered, the smart contract executes the corresponding contractual clause (Cassano, 2014).

Although my aim is not to speculate about the future of music as such, the emergence of smart contracting (native to blockchain, rather than server-based frameworks), has significant implications for IP and rights management for digital content, as demonstrated by Heap's *Tiny Human* track; and this does suggest that the production process and distribution for music, already still in recovery in the post-sampling era, may yet experience further radical, and profound evolution. Furthermore, within a blockchain environment, since decentralisation would also be native to all transactions, it may well be that Leadbeater's appetite for mass innovation, which could simply manifest as mass-attribution and distributed authorship, could yet come to increasingly dominate the production process of digital content.

In 2016, a new software platform, *Blockstack* was released. Described in the "Blockstack Whitepaper" as "a new decentralized internet secured by blockchains," Blockstack heralds a new kind of browser, that functions natively within the blockchain environment, and provides an opportunity for decentralised app developers to work with "services for identity, discovery, and storage" (Ali, Freedman, Nelson, Shea, 2017).

Blockstack thus purports to offer a new means to protect intellectual property rights - based on decentralised, peer-to-peer technology - whilst creating an environment within which friction-free transacting - and thus trading - could occur. Blockstack co-founder, Ryan Shea's vision is that Blockstack will enable developers and consumers "to come together in a way that's better for both of them; removing the middle men, removing the

monopolies [and that] Blockstack is a way for users to own their identity and own their data" (Shea, 2017).

What is compelling about Blockstack is that it is clear evidence of the variety of current activity that is directed towards achieving a redesign of the internet, building in authorship and identity protection from first principles, rather than having to retrospectively create new legislation and technological work-arounds as new platforms emerge. To a degree, the Blockstack project follows in the wake of what the technologist Jaron Lanier discussed in the book *Who Owns the Future*, where one of the central concerns was that the root cause of the widespread devaluation of digital music and other online content, was that fundamentally, the internet had been wrongly designed. Because of this design flaw, and since money in the digital age is simply another form of information, companies like Google and Facebook (Lanier refers to such organisations as "Siren Servers"), who control the vast majority of the information flow on the internet, are propagating what he termed "information asymmetry": the root-cause of the ongoing destabilisation of at the very least, creative economies on the net. Lanier's diagnosis of our contemporary attitude towards value was to suggest that "it has become commonplace to expect online services (not just news, but 21st century treats like search or social networking) to be given for free" (Lanier, 2014: 10). In terms of music as digital content, Lanier's point is that whilst there is now a widespread expectation that music should be free, or at least for a negligible price, this does however come at the cost of us continuously allowing the Siren Servers – the Facebooks, Googles, Apples, Airbnbs and Amazons of the world – to harvest our valuable information. Lanier's grim conclusion is that this state of affairs can only continue if ultimately, we are prepared to do away with careers in music, journalism and photography, to name but a few (Lanier, 2014: 16).

Lanier's solution to this problem was to redesign the internet with "two-way links" (Lanier, 2014: 227). This would mean that all of the connections made online (which in simple music terms could be a repost of a YouTube video, streaming or downloading a track, could all be tracked and that information), rather than languishing on a Siren Server's computers, waiting to be sold on to advertisers and other interested parties across the internet, could instead be captured by the content creator - so that a musician themselves could use that information to recoup income for their track, and use the information for future marketing. Lanier's point was that, in an increasingly hobbyist music ecosystem, where many creatives have already given up on making money from music - by accepting that it is more rewarding having their music heard for free than have it sitting in silence behind a paywall, and are instead making use of YouTube, Soundcloud, Bandcamp etc as a means to showcase their creative output, without really expecting this to turn into a long-term sustainable career plan - this is in fact the result of a problem with the design of the internet, rather than a question about whether or not music should be free.

One of Lanier's key concerns in *Who Owns the Future* was that wealth (re)distribution can be made more equitable via an evolution in technology. For Lanier, instead of a small number of individuals and organisations making huge economic gains within the digital

domain (which he refers to as a “winner-takes-all star system”), a two-way links system would allow for a bell-curve distribution of wealth. From what Shea and the Blockstack development team describe in the Blockstack Whitepaper, we may very well be moving closer towards a realisation of Lanier’s vision, such that a blockchain-based digital infrastructure could provide just such a bell-curve distribution of revenue from music content, where, for example, musicians who currently post their music for free on Soundcloud and Bandcamp, and who are thus already part of a wider music economy, could find that content being monetised within a blockchain-enhanced internet.

As such, Blockstack – whose native function is to run all digital content within a blockchain framework, not unlike Imogen Heap’s Mycelia project – is the promise of a new type of music economy. In this new economy, all contributors to digital content are properly paid, and creatives are able to track and manage their work across the internet, accessing payments when payment is due.

Disruption as a force for positive change

Blockchain’s promise to both protect copyright and remove intermediaries, is perhaps the most significant reason for understanding it as a very contemporary form of disruptive technology. From the perspective of the music economy, it is a promise that suggests that widespread wealth will come from ridding ourselves of an entire commercial infrastructure that has evolved around rights protection as well as the distribution and sale of music.

The idea of disruptive technology as it is presently understood, was introduced in 1995, in an article in the Harvard Business Review called, “Disrupting Technologies: Catching the Wave”. Within that article, the authors Joseph Bower and Clayton Christensen made the case for the way in which disruptive technologies can often enter a market unnoticed; undercutting established products in terms of price, and providing alternatives that may not have the performance of existing and established products, but are able to offer unforeseen benefits.

Their case study was the development of disk drives during the 1970s and early 1980s. The article described the way in a new generation of disk drives, which admittedly did not perform as well as those made by established companies such as IBM, nevertheless disrupted not only the market for disk drives, but went on to create the conditions for the birth of the personal computer industry. This new generation of drives brought down costs because they were smaller, and although they did not offer IBM’s functionality, they did however, require less power to operate, were more portable and were therefore suited to home rather than commercial use. The point that Bower and Christensen were making was that companies who continue to cling to their traditional working practices will find themselves being disrupted by new technologies. Equally, companies who carry on listening to their existing customer base, will also find themselves being superseded,

because disruptive technologies introduce new approaches that neither producers nor the marketplace necessarily understand.

The technology journalist Jamie Bartlett, in *The Secrets of Silicon Valley* a set of television documentaries charting the wave of technological, economic, political and cultural disruption emanating from Silicon Valley through 2016 and 2017, has offered some useful contemporary perspectives on disruptive technology: "Silicon Valley's philosophy is called disruption, breaking down the way we do things and using technology to improve the world [and that] the mantra of Silicon Valley is 'Disruption is always good ... that through smartphones and digital technology we can create more convenient, faster services, and everyone wins from that'" (Bartlett, 2017).

Whilst the positivist inferences of the concept of disruption have no doubt been evolved and amplified since Bower and Christensen first began to re-engineer its meaning in the 1990s, given that the thrust of their work was to create an association between the emergence of a particular piece of technology and the explosion of the home computer industry (which in itself was seen as a positive development), clearly, a precedent was set that signalled disruption as a force for positive change. In this sense, any negative impacts were either offset by the scale of positive development and improvement to a system or ecosystem overall (in terms of the IBM case study, then the creation of a new industry, along with the cultural change that home computing brought clearly mitigated any adverse effects to the commercial disk drive industry of the 1970s), and any collateral damage caused by disruption, was on reflection a necessary change that had simply not yet been identified as something that needed to change (again, although the smaller disk drives did not initially meet IBM's performance standards, on reflection, smaller and more efficient disk drives clearly represented the direction that product development needed to take).

So powerful is the contemporary sense of disruption as force for progress, in *Secrets of Silicon Valley*, Brian Chesky, the Co-founder of Airbnb, gamely tells Jamie Bartlett, "To be disruptive means you're changing the world" (Bartlett, 2017). Similarly, in his recent book, *The Disruption Dilemma*, Joshua Gans discusses the way in which this positive re-assignment of disruption has become endemic, quoting the Netscape founder Marc Andreessen who says, "To be AGAINST disruption is to be AGAINST consumer choice, AGAINST more people being served, and AGAINST shrinking inequality" [capitalisation in the original] (Gans, 2016: viii). Here we see disruption being equated with freedom, and a moral certitude that comes from giving consumers exactly what they want, and where any attempt to prevent (or disrupt?) that is not only standing in the way of technological progress, but that again it is a question of ethics and morality.

Gans also provides his own interpretation of disruption. Firstly, he shows that the *Encyclopaedia Britannica*, was not simply disrupted and superseded by a product or by a piece of software, but by the computer itself. So, whilst the historical timeline might show that it was Microsoft's Encarta - a CD-ROM launched in the 1980s that easily outstripped

the *Encyclopaedia Britannica's* information storage capacity - followed by Wikipedia - a potentially limitless library of information, as well as a new a peer-to-peer means of gathering and verifying that information - that led to the physical encyclopaedia's downfall, in fact, the real agents of change were the computer itself, followed by the internet. For Gans, Encarta was, and Wikipedia is, simply an expression of these more powerful and pervasive technology platforms. Gans also explores what he refers to as "containerisation" to show, that the development of shipping containers in the 1950s completely disrupted and overhauled the cargo industry. His mapping of this change in the industry describes how not only ships, but the ports themselves, had to be redesigned in order to deal with moving containers around and he concludes by saying that "finally, the entire logistics, information flow, and contracting space had to be reengineered" (Gans, 2016: 5). This is at the heart of Gans' analysis of disruptive technology; that disruption is not simply a matter of implementing improvements or efficiencies that have already been identified, but that it introduces a wholesale change to what an industrial or commercial environment is.

In response to these examples, Gans goes on to state that "disruption occurs when successful firms fail, because they continue to make the choices that drove their success' and that 'the more a firm is focused on the needs of its traditional customers, the more likely it will fall prey to disruption" (Gans, 2016: 9-10). In both instances, Gans' idea here is that historical or behavioural precedent can rapidly become a threat for businesses when faced with a disruptive technology, and this may very well take the form of an inability to adapt to a new technological environment, or through a potentially unacknowledged aversion to risk on the part of not only a company, but also a consumer base. In the case of the *Encyclopaedia Britannica*, Gans' point is that not only did the *Encyclopaedia's* publisher's and then Microsoft fail to adapt to the rapidly evolving digital environment of the 1980s and 1990s quickly enough, but that as containerisation suggests, disruption forces adaptation across an industry in ways that are both unprecedented and unforeseeable.

However, Gans suggests that this still does not go far enough to really describe what disruption is. Whilst Gans' re-positioning of disruption is in itself worthy of considerable academic analysis and examination, for our current purposes, we need simply to understand that that the step-change that he introduces in terms of addressing what disruption is and how it works, is to split the concept into two components, which for his own purposes allow him to reflect more fully on the evolution of encyclopaedias and the notion of containerisation.

In his reading of "Disrupting Technologies: Catching the Wave", not only does Gans acknowledge the issues that Bowers and Christensen raise in relation to the disruption of IBM market dominance, but he goes further to develop a more nuanced reading of their work. In order to do this, he introduces a "demand-side" theory of disruption along with a "supply-side" theory (Gans, 2016: 10). On one hand, demand-side disruption describes the relationship between a company and its customers, where a business' reluctance to

stop giving their customers what they want (or at least what they think their customers might want), whilst on the other, supply-side disruption is more concerned with the framework - what he calls the "architecture" - of a product (Gans, 2016: 10).

With this bifurcated version of disruption in mind, we can now begin to bring our focus back towards music. We have seen that Gans' approach allows us to think how the changes that disrupted businesses and technologies go through do not simply result from a set of decisions that are intended, for example, to enhance a particular product's performance, but instead, because everything around them shifts. As we saw earlier, streaming caused huge disruption to both music distribution and consumption patterns, and whilst labels and producers - and even listeners and fans to a degree - might find it difficult to accept that music's linear identity - as a commodity that can be bought and sold - is fast disappearing. While formats and consumption habits can remain all-too wedded to outmoded trends and now increasingly anachronistic technologies - even vinyl's recent resurgence may in time appear to be the swan song of and paean to a culture now in practice long-gone, although its ghost remains - in practice, the distribution, marketing and sales framework that surrounds music is becoming all but unrecognisable. What is curious in this regard, is that a technology futurist such as Don Tapscott is still suggesting that the blockchain is a panacea that will bring value back into music simply by introducing efficiencies that are designed to counteract the wholesale change to value and consumption practices that the internet brought to music. In terms of Gans' theory of supply-side and demand-side theory of disruption, then Tapscott may well be right, losses might be recouped and a bell-curve of wealth distribution across the music economy could emerge; but it is far from certain that music as a linear commodity will survive in its current form.

In this regard, it is therefore worth pausing to remind ourselves that blockchain was not designed to increase efficiencies and profit margins within the music economy, since it grew out of the cryptography and cypherpunk communities, who were more concerned with protecting anonymity and solving the double-spend problem that continues to blight digital finance, and thus, any benefits that might accrue to music are not inherent to blockchain, but are simply by-products of another set of design principles and agendas. This suggests that music is already "behind the curve" as it were, which is to say that music's future within a blockchain environment may be far from secure, and that Tapscott's enthusiasms for the 'rain' that will fall on content creators, could well benefit from some additional flood and storm warnings...

Disruption as disruption

Whilst Joshua Gans certainly furnishes us with a useful update to Bower and Christensen's ideas, in order to arrive at a more conclusive reading of disruption as actual disruption - wherein disruption speaks of exponential and unforeseeable change, rather than a filtered and weaponised version of the word that serves to affirm the appetites of market entrants as would-be giant-killers, who improve things by tearing them down - we can now turn to

a recent set of philosophical perspectives that will open this clearly contentious term to a further set of interpretations.

The philosopher Quentin Meillassoux in his landmark book *After Finitude* discusses the way in which, through a process of logical reasoning, it is possible to show that we can develop a new way of understanding our relationship with the world around us, a world that is presented to us via our human faculties of perception and understanding. Meillassoux's work is concerned with the nature of contingency and its presence in our consciousness of the world. He goes as far as to name it a 'necessary contingency', and it is just such a contingency that sits at the heart of a notion of disruption as actual disruption. Meillassoux's contingency is one that absolutely must form part of the way in which we come to understand our presence in the world, must shape how our knowledge of that world might work, and must be the underlying cause for how anything comes to happen in the world, which in simple terms, is for absolutely no reason at all. Meillassoux's contention is that there is absolutely no reason that anything happens at all, informing us that, "Everything is possible, anything can happen - except something that is necessary, because it is the contingency of the entity that is necessary, not the entity" (Meillassoux, 2016: 65). In his essay "Anything is Possible: Review of Quentin Meillassoux, *After Finitude*", Peter Hallward condenses Meillassoux's ideas into the phrase "nothing is necessary, apart from the necessity that nothing be necessary" (Hallward, 2011: 130), which can serve us as a useful point of reference. Things may get torn down, and things may improve, but fundamentally, disruption is always a process that goes beyond any attempt to capture it in the name of "improving" the world; the only aspect of disruption that can really be said to have any actual, or necessary presence is its ultimately contingent nature; everything else is just wishful thinking.

Meillassoux's approach is to argue against a long-standing philosophical perspective known as idealism, which he reframes as "correlationism" (Meillassoux, 2008: 5), which according to Meillassoux, is a claim that we can have no knowledge or grasp of world as it is in itself, only in a form that is presented to us via our capacity to comprehend and experience that world: "By 'correlation' we mean the idea according to which we only ever have access to the correlation between thinking and being, and never to either term considered apart from the other" (Meillassoux, 2008:5). Thus, there are no "real" experiences, simply our bodies' and brains' interpretations of the world around us, if indeed, we can be sure that there even is a world beyond our senses.

Meillassoux's response to this position is to absolutely turn it on its head by turning it against itself. The correlationist's problem is that if it is true that we can only ever think about the world in terms of a correlation between what we experience and what we are able to experience - in other words if the correlation is "true" - then such a statement immediately cancels out itself out. This is because any claims about the truth of a correlationist perspective are not objectively true, they are simply statements as we would say, "for me" - which is to say that they are made from a subjective and correlationist

perspective – and they therefore lack any means of being absolutely, or objectively, verifiable.

Meillassoux supports this logic by using the concept “facticity”, which is his way of referring to our inability to know what underpins knowledge. He claims that it is ‘true’ that there are certain things that we cannot know, or, in the philosopher Ray Brassier’s words, facticity “pertains [...] to the principles of knowledge themselves, concerning which it makes no sense to say either that they are necessary or that they are contingent, since we have no other principles to compare them to” (Brassier, 2007: 66), which is to say that we are unable to say anything about how it is that we know what we know, because we have no means of holding this knowledge up against any other point of reference.

Meillassoux’s conclusion is therefore to say that only one of these positions can be objectively true, facticity or the correlation: either we accept that it must be true that there are certain things that we cannot know, and that lack of knowledge is absolutely “true”, or that it must be “true” that everything we experience must be in terms of our capacity to experience it. But as he says, this latter position is self-negating, because a subjective truth is not a truth - simply a perspective. For Meillassoux, the logical consequence to all of this is to say that the truth about our lack of knowledge is in itself is a form of knowledge about the unknown; in other words, we absolutely know that we cannot know something: that which underpins our world must always go beyond our capacity to understand it, and is therefore outside the category of knowledge; it is absolutely contingent. He tells us that “Facticity [...] forces us to grasp the ‘possibility’ of that which is wholly other to the world, but which resides in the midst of the world as such” (Meillassoux, 2008: 40), which is to say that we know that contingency exists right there in front of us, all of the time, and we can do nothing about it.

Meillassoux’s thought is rich and complex, and the correlation and facticity are part of his wider philosophical project which is intended to show, not only that what lies beyond human thought cannot be conceptualised, but more importantly, that the things that happen in the lived world are grounded on what he calls a “necessary contingency”, where “contingency is such that anything might happen, even nothing at all” (Meillassoux, 2008: 62). This, then, is the underlying contention of Meillassoux’s argument, that, instead of nothing existing but our sense of having an experience (the idealist-correlationist position), Meillassoux proposes that only absolute contingency can be seen to necessarily exist.

Whilst Meillassoux’s philosophical reasoning was not necessarily intended to articulate the contingent nature of disruptive technologies, we can nonetheless refocus his outcome of his thought and use it to consider that, as phenomena that are part of a world that we know to be pinioned on a set of principles that we cannot know - in other words, contingency - then it follows that disruptive technologies are in themselves fundamentally contingent. So saying, perhaps we would be better served to understand disruptive technologies as “contingency technologies”: technologies that must always go beyond our capacity to understand or anticipate them - not because they are too complicated for

us to understand - but because, just as with everything else in the world, there are aspects to them that we know that we cannot know.

Whilst Meillassoux's logic may appear to be slightly deflationary, in that his position suggests that we shall forever be at a disadvantage as regards our knowledge of the world, there is also a very affirming aspect to his thought which allows us to recognise that if nothing else, change and adaptation are constants. Even the seeming hegemony of Lanier's Siren Servers, that Blockstack and Mycelia are looking to topple, are themselves subject to the same inherent instability and necessary contingency that Meillassoux introduces us to. In this sense, all technologies are contingent and therefore disruptive, not simply because of their tendency to disrupt supply and demand-led economic ecosystems, but because, as contingency technologies, they cannot do otherwise.

Notes

ⁱ Mark Mulligan, the music analyst at Midia Consulting, continues to provide a range of valuable perspectives and insights on his Music Industry Blog, and which continue to document the changes and threats that confront embedded and traditional approaches to thinking about music commerce and music as a linear product.

ⁱⁱ Although it was reported in 2016 that, “Apple is now preparing to completely terminate music download offerings on the iTunes Store, with an aggressive, two-year termination timetable actively being considered and gaining favor” (Resnikoff, 2016) others, including Mark Mulligan, are more sanguine, and although it is now generally accepted that that streaming will indeed lead eventually to the complete removal of downloads from the mainstream music marketplace, Apple’s two-year plan may be too ambitious, even for them, although it is worth noting that Mulligan himself is reported to have put a five year run-out of Apple’s iTunes download store (Blake, 2016).

ⁱⁱⁱ In the book, *Making Is Connecting*, David Gauntlett makes the case for what can be termed the Sharing Economy, mapping a range of amateur digital content production practices, largely, although not exclusively, enabled by YouTube, and which have determined the shift from Web 1.0 to Web 2.0.

^{iv} Leadbeater’s 2008 book, entitled *We-Think: Mass innovation, not mass production*, mapped a wave of change that internet practices were bringing to the production and distribution of both ideas and products. One of Leadbeater’s key assertions was that digital networks fundamentally undermined what he saw as the principles and frameworks that supported in his words, ‘industrial era organisations’. By bringing his focus to bear on the architecture of Wikipedia and World of Warcraft.

^v Mulligan has made much of the way in which YouTube content has posed one of the biggest threats to music’s potential to generate revenue from online audiences and consumers (Mulligan, 2016).

^{vi} For example, Imogen Heap’s music startup, Mycelia - whose mission is “empower a fair, sustainable and vibrant music industry ecosystem involving all online music interaction services” (Mycelia, 2017) - makes use of the Ethereum blockchain in order to protect and monetise its artists’ intellectual property. Ethereum regularly publishes the number of computers, or “nodes” that are connected on its network. A recent count showed a global total of 20567 active nodes (Ethernodes, 2017).

References

Ali, M, Shea, R, Nelson, J and Freedman, M.J. 2017. Blockstack: A New Decentralized Internet. Whitepaper Version 1.0.1 available at <https://blockstack.org/whitepaper.pdf> (accessed October 2017).

Bartlett, J. 2017. The Secrets of Silicon Valley. <http://www.bbc.co.uk/programmes/b0916ghq> (accessed October 2017).

Blake, E. 2016. ‘Apple won’t end music downloads in 2 years, but it will someday’ <http://mashable.com/2016/05/12/apple-itunes-kill-downloads-music/#SZwCM6Vwb8qQ> (accessed October 2017).

Brassier, R. 2007. *Nihil Unbound: Enlightenment and Extinction*. Basingstoke & New York: Palgrave MacMillan.

Cassano, J. 2014. *What Are Smart Contracts? Cryptocurrency’s Killer App*. Available at <https://www.fastcompany.com/3035723/smart-contracts-could-be-cryptocurrencys-killer-app> (accessed 25.9.2017).

Ethernodes. 2017. Network. <https://ethernodes.org/network/1> (accessed October 2017).

Gans, J. 2016. *The Disruption Dilemma*. Cambridge MA and London: The MIT Press.

Gauntlett, D. 2011. *Making is Connecting: The Social Meaning of Creativity, from DIY and Knitting to YouTube and Web 2.0*. Cambridge & Malden: Polity Press.

Lanier, J. 2014. *Who Owns the Future?* New York: Simon & Schuster.

Leadbeater, P. 2009. *We-Think: Mass innovation, not mass production*. London: Profile Books.

Meillassoux, Q. 2008. *After Finitude: An Essay On Contingency*. London: Continuum.

Mulligan, M. 2016. 'The Labels Still Don't Get YouTube And It's Costing Them'.
<https://musicindustryblog.wordpress.com/2016/01/08/the-labels-still-dont-get-youtube-and-its-costing-them/> (accessed October 2017).

Mycelia. 2017. <http://myceliaformusic.org/> (accessed October 2017).

Raval, s. 2016. *Decentralized Applications: Harnessing Bitcoin's Blockchain Technology*. Sebastopol: O'Reilly Media Inc.

Resnikoff, P. 2016. 'Apple Terminating Music Downloads "Within 2 Years"'
<https://www.digitalmusicnews.com/2016/05/11/apple-terminating-music-downloads-two-years/>
(accessed October 2017).

Shea, R. 2017. A New Blockstack Internet. Available at <https://blockstack.org/videos/blockstack-summit-2017-a-new-blockstack-internet> (accessed October 2017).

Tapscott, D. 2016. How the blockchain is changing money and business. Available at
<https://www.youtube.com/watch?v=Pl8OIkWpRpc> (accessed October 2017)