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OWNERSHIP AND CONTROL IN THE CREATIVE ECONOMY

On new property rights for digital assets

Melissa Terras, Burkhard Schafer, and Amélie Favreau

Abstract

This chapter explores the evolving legal context surrounding the ownership of digital assets, delving into the ramifications of legal frameworks such as property law, copyright, and data protection for the creative digital industry. We underline the importance of the nexus between ownership technology and legal reform, which will bear profound implications for the digital creative economy. Focusing on the recent consultation and recommendations by the Law Commission of England and Wales on this topic (2022–3), we suggest incremental legal adjustments as alternative strategies. We juxtapose this backdrop with a case study on non-fungible tokens (NFTs), which are envisioned as a “property layer” in the emerging Web3 Internet. The ascent of NFTs, evidenced by eye-catching transactions in the art world, underscores a paradigm shift in digital ownership. However, NFTs and decentralised technologies, while holding substantial promise, do not yet fully align with creatives’ desired rights. In order to provide legal certainty, we emphasise the need for nuanced understanding and collaboration among legal scholars, computer scientists, and creative industry stakeholders in order to reimagine property rights in the digital sphere, shaping the future of digital assets and their place within the creative economy together.

Introduction: ownership and the evolving landscape of digital assets

The pervasive influence of the internet and digital technologies has introduced a profound disruption to established notions of ownership, control, and copyright within the creative industries. The unprecedented ease of

replicating and disseminating digital content challenges the traditional models of intellectual property protection. This disruption extends to the very core of artistic ownership, as the digital realm offers new avenues for creative expression, collaboration, and distribution of both content and data (see also accompanying case study). However, this paradigm shift also brings forth challenges and dangers. The democratisation of content creation and distribution can dilute creative control, as works are susceptible to unauthorised reproduction and modification. Moreover, the fluidity of digital platforms sometimes blunts copyright enforcement, allowing for the rapid proliferation of unattributed or misappropriated works.

As a result, practitioners within the creative industries find themselves navigating a landscape that demands innovative approaches to safeguarding their intellectual property rights while concurrently embracing the transformative potential of digital technologies. In this context, preserving the integrity of creative works and ensuring equitable compensation for creators emerge as critical imperatives for the sustainability and vitality of the creative ecosystem. However, reforming the law of digital assets has implications on the future dynamics of the creative digital industry. This chapter seeks to contextualise this discussion and explores the implications of different legal frameworks, such as property law, copyright, and data protection in a distributed economy. In order to do so, it takes as a case study the broader discourse surrounding the legal status of non-fungible tokens (NFTs).

To fully appreciate the significance of changing legal frameworks about ownership and control, it is imperative to delve into the historical evolution of property law. In 2016, Perzanowski and Schultz (2016) declared a notable shift with “The End of Ownership,” attributing the marginalisation of ownership within the economy to the advent of the internet and digitalisation. This transformation has led to the prominence of intellectual property law, data protection regulations, and contractual agreements, albeit at a substantial cost to consumers, data subjects, and particularly artists and creatives. As an alternative, NFTs and related decentralised technologies have been proposed for a new “property layer” within the future internet (McConaghy and Holtzman, 2015), often referred to as Web3 (Voshmgir, 2020). This layer aims to restore the original promises of decentralisation and disintermediation while mitigating the adverse impact of rampant digital replication on creatives’ business models.

Given the emergent rise in the use of decentralised technologies, in 2022, the Law Commission of England and Wales started an ambitious law reform project on the property status of digital assets (2022). Central to the proposal of the Law Commission is to create an entirely new type of property class: ownership of digital assets. To do this, it suggests replacing the concept of possession – the way in which we can exercise our rights over physical objects such as pens, by simply holding them – with a concept of “control.”

For example, a person who mints an NFT can exercise control over it, so it closely resembles the way we possess ordinary physical goods, so that an analogous legal treatment is merited.

Responding to the consultation, Creative Informatics¹ organised, together with DECaDE, the Centre for the Decentralised Digital Economy,² a series of engagement workshops in October 2022 that informed a submission to the consultation (Schafer, 2022). We use this context as the basis upon which to discuss the changing nature of ownership within the digital economy. While NFTs play a central role in the proposal of the Commission, the questions it raise go far beyond that specific technology potentially heralding a sea-change in the way in which the digital economy in general, and the creative digital economy in particular, will operate.

While the potential advantages of NFTs and related decentralised technologies are noteworthy, this chapter contends that they are in their present form unlikely to provide the desired rights and aspirations of creatives and their patrons. The Law Commission's 2022 proposal and 2023 recommendations, while commendable, may require further development to effectively address underlying concerns. The current approach appears excessively focused on a particular technology and its development, potentially hindering the law's ability to adapt to future changes. In addition, it excessively favours a technology characterised by significant shortcomings and high environmental costs. Instead, incremental legal adjustments, such as updating technical aspects of copyright law and implementing stricter regulations concerning the rights associated with purchasing NFTs, could provide a more efficient solution to specific legal challenges. Nevertheless, the proposal underscores the prospective synergy between ownership technology and legal reforms, with far-reaching implications for creatives and the broader digital economy. This dynamic presents intriguing design challenges for both computer scientists, platform providers, and the creative digital sector and will require that creatives understand the changing regulatory and technological environment in order to protect their, and utilise others', digital assets.

Digital assets

The term “Digital asset” is broad and rather all encompassing:

It captures a huge variety of things including digital files, digital records, email accounts, domain names, in-game digital assets, digital carbon credits, crypto-tokens and non-fungible tokens. The technology used to create or manifest those digital assets is not the same for each. Nor are the characteristics or features of those digital assets.

(Law Commission, 2023, p. 2)

The range of resources, many of which are in emergent formats, described by this indicates how crucial they are to our functioning economy:

Digital assets are increasingly important in modern society. They are used for an expanding variety of purposes – including as valuable things in themselves, as a means of payment, or to represent or be linked to other things or rights – and in growing volumes.

(Law Commission, 2022, p. 1)

However, the electronic nature of born-digital and digitised assets creates particular challenges. It makes them considerably more vulnerable than other types of assets (see Deegan and Tanner, 2006 for the complexities of digital preservation. The Library of Congress attempt to provide guidelines on the preservation of various different creative formats, “maximizing the chances for survival and continued accessibility of creative content well into the future” (2023)). This can be exacerbated in the creative industries, with many small businesses operating without access to institutional back-up processes, infrastructure, or support (Keller et al., 2005).

In addition to these digital preservation challenges, more malleable nature of control over digital assets also creates opportunities that remain currently under-explored in creative or legal frameworks:

this could facilitate more distributed and equitable access to property rights and to the legal recognition and protection they provide, allowing a more diverse range of people, groups and companies to interact online and to benefit more widely from their own productivity. Digital assets themselves enhance this process by enabling the communication of value via electronic means, which broadens the scope of and access to markets and increases the transferability, composability and liquidity of things of value.

(Law Commission, 2022, p. 2)

A wider discussion of the current legal frameworks which underpin the digital economy can contextualise their limitations and the opportunities for change in identifying “digital asset” as a specific property class. In particular, it is necessary to focus on the perceived end of ownership in today’s successful digital economy and the ramifications this has for the creative industries.

The end of property?

In 2016, Perzanowski and Schultz (2016) showed how notions of ownership have shifted in the digital marketplace, declaring the increased use of licenses to access digital content “The End of Ownership” while making an

argument for the benefits of personal property, particularly around user constraints, permanence, and privacy. This had continued to play out online: nowadays, the internet is dominated by major platforms and technology providers that utilise surveillance capitalism (Zuboff, 2019) as their profitable business model. Yet few major platforms (such as Meta/Facebook, Twitter, YouTube), *own* their two most valuable assets – the *digital content* that the platform users generate and that drives the interest in and interaction with their profit-making platform and the *personal data* that these interactions generate. However, they have also managed to shield themselves from some of the consequences that one might otherwise have expected from such a lack of legal title. Rather, platforms have acquired a (temporary and revokable) permission to use both content and data from (possibly, ideally) the owner for the digital content and, for personal data, from the data subjects themselves. Often, this takes the form of standard contracts together with the platform’s terms and conditions, leveraging the network effect that underpins their bargaining strength – agree or risk losing your audience, as your friends (and customers) are already with us (Barwise and Watkins, 2018). Contract, rather than property, then becomes the dominant legal paradigm to order relations online.

This has significant social consequences. Property law gives an “absolute” title – if you own a (physical) painting, nobody is allowed to take it away from you (Singer, 2022). Contract law by contrast only gives a relational right (Stone and Devenney, 2022) – if you permit anyone to borrow this painting, this only gives a right to them, and nobody else. The stronger title that property law confers comes at the cost of “rigidity”: the law prescribes exactly what rights adhere to an owned thing, and these and only these rights are transferred if someone else acquires the object. This allows the state to shape property in a way that meets its (democratically legitimated) vision of the common good. If someone acquires your painting, they acquire a bundle of specific rights, defined in law (such as the right to sell the painting in turn) and nothing else. Contract, by contrast, allows the two parties to agree on any condition they like – the contract is “private” between them and hence, within reason, nobody’s business.

Through contracts, two parties can create and shape the legal relation between them. This is unproblematic if they both have roughly equal bargaining power and really consent freely in the contract. However, internet service providers and large platforms in particular have considerable bargaining power – and offer their services on a “take it or leave it” basis – with no scope for an individual to negotiate their own contract with the likes of Facebook or YouTube. The law began to recognise this problem at the end of the 19th century and used the concept of “good faith” to put limits on what the stronger party can induce the weaker to agree to (Gilmore, 1953). Nowadays, this finds its main expression in consumer protection law (Howells and Weatherill, 2017). But, as the name suggests, consumer protection

law protects only consumers and for this reason alone is of limited usefulness in the world of Web 2.0 and the “prosumer” who is both consumer and producer/seller of goods. Therefore, although the internet came with the promise of disintermediation, for example, connecting a creative directly with a customer, patron, or audience, we instead created a world where both rely on powerful digital intermediaries like YouTube or Spotify. Contract law provides next to no protection for the creative who needs the platform to reach any audience, as the law treats them for contract law purposes as the platform’s equal; subscribers of the services are only marginally better protected.

The end of property in the creative economy?

While large platforms managed to operate even in the absence of property titles to digital assets, the repercussions are even more noticeable, and less easy to circumvent, for individuals who participate in the digital economy, be it as content creators or data subjects. Over the last three decades, when property law went into retreat from the digital domain, other legal disciplines were “commandeered” to fill the void, most importantly copyright and data protection law. Neither, however, was designed for this role. This has often resulted in their overreach, using their underlying normative logic and value systems for issues they are ill suited for (Depoorter, 2008). Conversely, the perceived need to shoehorn problems into either system has also negatively impacted their performance for those fields they were designed for. The common misconception of personal data as something owned by the data subject in particular is harmful for an adequate privacy protection regime.

Creators and the creative industries have found themselves more often than not at the centre of the ensuing realignment, including the legal debates and the struggle to retain control of assets (and revenue flow) online. The digital landscape, while offering unprecedented avenues for exposure and distribution, has simultaneously facilitated the unauthorised duplication and dissemination of creative works. The ease of copying and sharing digital content has led to rampant piracy and uncontrolled replication, eroding the creators’ ability to regulate and monetise their creations (Handke et al., 2016). Additionally, the proliferation of user-generated platforms and social media has enabled the uncredited use and resharing of copyrighted material, further undermining creators’ control over their intellectual property (Lessig, 2009). The evolving business models in the digital space, often centred around free or low-cost access, have complicated the process of generating sustainable revenue for creators (Li, 2020). This shift challenges established monetisation strategies, as the traditional revenue streams from physical sales or licensing have been disrupted. Furthermore, the complexity of digital platforms and the global nature of the internet make it difficult to enforce copyright and intellectual property rights consistently across different jurisdictions (De Beer

and Clemmer, 2008). As a result, creators often find themselves engaged in a constant struggle to identify, track, and address instances of unauthorised use or infringement and are often at a loss as to how to engage with emergent, decentralised technologies, despite the fact they hold the potential for efficient transactions, greater accountability, and increased or direct payment (Patrickson, 2021).

It was not meant to happen like this. The internet, born with the promise of disintermediation and decentralisation, quickly reverted to an economy that, if anything, became more centralised, with choke points that either were re-incarnations of old intermediaries online (such as Disney), new players fulfilling similar purposes (such as YouTube, Amazon, or Facebook), or architectural service providers such as Google that enable the former to function (Wigand, 2020). Early on, when the law seemed to be in retreat, digital rights management (DRM) technologies were used, but they systematically over-enforced copyright, to the detriment of legitimate sharing, using, criticising, or commenting on work. DRM strengthened the power of platforms while disrupting community building between creatives and their customers (Erickson, 2003). Nowadays, anti-competition law that fines or breaks up online monopolies has become the most important regulatory tool for the internet (Volmar and Helmdach, 2018).

A few creatives have managed, and manage, to use the decentralised internet architecture to its greatest effect, connecting more directly with their fans and finding in the process new ways to monetise their skills (see Chapter 8). Over the last few years, blockchain technology has increasingly been promoted as a possible answer, rekindling the vision for a future “Web3” that this time round will be, and remain, more truly decentralised than Web 2.0 was able to (Voshmgir, 2020). However, these technologies require further developments regarding their legal standing to provide certainty in this rapidly evolving space.

The ascendance of non-fungible tokens: a paradigm shift

Starting around 2017 and gaining momentum during the COVID-19 pandemic, the term “non-fungible token” went from obscurity to prominence. Striking headlines such as “Grimes Sells \$6 Million Worth of Digital Art as NFTs” (Kastrenakes, 2021) and “Beeple NFT Fetches Unprecedented \$69.3 M. at Christie’s” (Villa, 2021) underscored the perception of unexplored wealth and fresh revenue streams for digital artists. These instances seemed to mirror the economic transactions that were the hallmark of the traditional, tangible world. In the face of persistent digital copyright infringements, NFTs promised a novel approach to limitations faced by creatives. Examining them provides a concrete example regarding the legal complexities surrounding new innovations regarding digital ownership and control.

Combining and extending the definitions of Bal and Ner (2019), Regner et al. (2019), and Leech (2022), we adopt Valeonti et al.'s 2021 definition:

a non-fungible token (NFT) as a cryptographically unique, indivisible, irreplaceable and verifiable token that represents a given asset, be it digital, or physical, on a blockchain.

(Valeonti et al., 2021)

There are two ways of understanding an NFT: one restrictive, the other extensive. Strictly speaking, the NFT is only a non-fungible token on a blockchain, that is, one which can't be replaced by a similar or identical token (on the blockchain: a system in which a record of transactions is maintained across computers linked in a peer-to-peer network, see Gayvoronskaya and Meinel, 2021). It has a digital fingerprint that allows it to circulate on the blockchain, to be combined with others in a collection, exchanged, burned, and so on. More broadly, an NFT can be understood as the three elements of the definition together: the token, the smart contract that deploys it, and finally the metadata associated with it. This extensive conception can lead to confusion between a creative work, or a distinctive sign, contained in the metadata – the subjects of copyright – and the token or the digital fingerprint that points to it. This confusion is easily maintained in marketplaces such as OpenSea or Nifty Gateway,³ which call the intangible images for sale “NFTs.” In this way, they create uncertainty, given that with the purchase of an NFT there is also a simultaneous transfer of intellectual property rights. In our approach and in line with the usage in the report of the Law Commission of England and Wales on ownership in digital assets, we adopt a strict conception of NFTs and distinguish carefully between the token on the smart contract (the word “pipe” in Magritte's famous painting) and any object, digital or otherwise, that the token points to.

Given that NFTs are effectively a new form and expression of a contract regarding a digital asset, NFTs are not only for the sale of new, digitally born art. Given the flexibility of their application, they have been posited as a new standard for communication in the creative industries (Shilina, 2021); a way to raise crucial funds for the austerity-stricken gallery, library, archive, and museum (GLAM) sector (Valeonti et al., 2021); a way to define ownership and assist production and marketing in the fashion industry (Nosirova, 2023); a way to provide proof of uniqueness, copyrights, new business models, digital integration, and security in the music industry (Senkardes, 2021); and a way to transform the entire creative economy (O'Dair, 2018). The concept itself is sound; however, there are well-reported difficulties regarding NFTs, which are often not to do with the technology itself but the behaviour and performance of new, centralised players in these markets such as wallet services: third parties that offer new services build around the decentralised

substratum but with much more conventional structures. These new intermediaries not only have traditional business structures but also are disproportionately implicated in many of the recent crypto-asset related scandals and problems (Schafer et al., 2023, p. 3).

Previously we distinguished carefully the token as a digital object from the digital asset to which it “points” – we can think of the difference between a sales receipt and the object that was sold or, in terms of Magritte’s painting, the image of a pipe with its metadata that says it is not a pipe and an actual pipe. There is a widespread misconception that acquiring an NFT means acquiring the copyright in the underlying work, but this is not necessarily the case (Grimmelmann, 2022). In the digital economy, the traditional legal framework of the sale of an object is inverted: what the buyer typically acquires is a license to use, with a range of copyright permissions. Not normally acquired is copyright itself, and there is never ownership transfer for the media file in which the work is expressed. How do NFTs change this equation? Applying the distinction between NFT in the narrow sense and the NFT as relation between the token and an external asset, we can first conclude that the NFT token itself probably does not attract copyright – it is, as we said, a smart contract, that is, a piece of computer code. While software is in principle capable of attracting copyright, a short and trivial instruction will not. At the very least, the terminology used by platforms is misleading. However, a separate question is the copyright in the underlying asset: the media file that typically resides outside the blockchain, for instance, a .jpg file with a bored ape. If the underlying file attracts copyright at all, then transfer of the NFT *can* also entail granting of a copyright license. This could be through the way the smart contract itself is set up, through a representation of the license in code, or simply through the terms and conditions of the platform that organises the transfer. Of all of these, the last is the most common and for the buyer also the most fragile – the terms and conditions of the contract can later be changed without this being visible in the NFT. In summary, often the buyer will not acquire even a copyright permission: if they acquire one, it typically operates independently from the NFT.

The vulnerability of NFTs to theft, blackmail, or misuse necessitates clarification within the legal framework and cannot be forced by the technology alone (Pryor, 2022). Even the initial premise of assured authenticity, akin to traditional art ownership, has been disrupted by instances like Dutch artist Lois van Baarle’s unauthorised NFT uploads, when over a hundred of her works were uploaded without her permission on the NFT auction platform OpenSea,⁴ leaving the “buyers” of these works in a legal limbo (Beckett, 2022). Similarly, OpenSea had to withdraw a NFT of a Jean-Michel Basquiat drawing when the Basquiat estate informed them that the seller did not own any rights to the work (Artforum, 2021). Beyond art, NFTs have extended to novel domains, such as sports. Notably, tennis player Oleksandra

Olinynykova auctioned an NFT offering lifetime rights to a part of her arm for tattoo placement or sale (Hamacher, 2021). This case prompts inquiries into bodily ownership, advertising, and intellectual property rights within emerging digital ecosystems, indicating the complexity inherent to this area: if an artist now creates an image on her skin, and the token is subsequently sold to a third party, what are the rights of the artist who created it? If the new token owner wants to create an avatar of the tennis player for a virtual game and put a digital version of the tattoo on that representation, does the original creator have a say and ability to prevent this from happening (Faulkner III, 2019)? What if the avatar in turn is minted as an NFT; does this require the permission of the player, the artist, or neither because control over the NFT entails full legal control also over the tattoo? The intricacies of this problem now extend beyond prior literature (Hsieh, 2019).

The desire to replicate ownership in the digital space remains strong not just because of an economic imperative but because it resonates with strong intuitions about fairness, identity, and agency. But just as with previous “ownership technologies,” NFTs by themselves are at best a pale imitation of the way in which the law understands ownership and therefore do not actually provide a simple solution to ownership and control in the digital domain. They are intangible assets in themselves, an accessory to the dematerialised medium, and this may have an impact on the exploitation of rights surrounding them, including copyright and intellectual property rights. This has given rise to a variety of legal cases where these aspects are being ascertained and adjudicated, and the legal frameworks around them are still being debated (see, for example, Chatain et al., 2021; Zerbib and O’Rorke, 2021). In many cases the law has taken on a complementary role, trying to bridge the gap between technological affordance and legal ideal. But this in turn created new problems and inequities, and in particular shifted the power even further away from ordinary buyers and consumers of digital good and the people who create them towards the technology companies that provide the technical infrastructure for their consumption.

Changing legal systems

Opening up the conceptual space for new forms of ownership in the digital world is an important development to realign our digital economy with legal ideals that are deeply embedded in our legal systems. The internet may have heralded the “end of ownership” because digital assets do not fit into any of the existing categories of “ownable” things. They are not physical objects like pens or land that can be possessed. They are not objects that are created by the legal system, like mortgages and debts, which can be transferred by the operation of the law (what Scots law calls incorporeal things and English law “choses in Action”). Nor are they like intellectual property: while also an

abstraction, copyright operates independent of the medium within which an idea is expressed, while digital assets such as media files are essentially linked to their mode of expression. Recognising a third (or fourth) category of personal property – digital assets, in addition to existing frameworks regarding intangible and tangible items – is an important first step to reclaim territory lost to other legal regimes. It can help to realign public perception and understand their normative relation with the digital objects that they encounter in their lives with the legal understanding of this relation.

In response to these problems and opportunities, in 2022 the Law Commission of England and Wales put an ambitious proposal on digital assets out for consultation. Noting that “Digital assets and methods for the transmission online of things that the market values have struggled to integrate themselves with the law of personal property” (2022, p. 2), for the first time, they proposed that the law will explicitly recognise ownership over some type of data objects. Although their call for evidence and consultation concluded that many aspects of the management of digital assets were already accommodated, and also in their final report (2023) give priority to the court-centric evolution of the law, they do recommend statutory intervention that clarifies the status of cryptotokens and NFTs.

Under this proposal, for a type of digital asset to become ownable, three things have to be in place:

1. it is composed of data represented in an electronic medium;
2. it exists independently of persons (unlike the skin of our tennis player) and independently of the legal system;
3. it is rivalrous (if it is consumed by one user, it cannot simultaneously be consumed by another).

It is the lack of rivalrousness that was traditionally the impediment for recognising ownership in digital assets. To be ownable, an asset has to be rivalrous on its creation, and there must be a mechanism that preserves that rivalrousness when the owner disposes of it, and in particular transfers it to a new owner: previously there has been no obvious way to transfer a digital asset to a new owner so that only that person now has control over it. The Commission concludes that this is still the case for most media files.

However, only a small adjustment in the law is needed to consider cryptotokens, including NFTs, rivalrous and in principle disposable: the concept of possession (the physical control over a thing) needs to be replaced with a notion of “control.” If the computational infrastructure is such that, provably, only one person at a time can have control over a token, and furthermore, if the seller demonstrably loses control upon transfer, and the buyer acquires it, then the law should and can recognise this as a transfer of ownership. Blockchain environments provide the mechanisms to achieve and record this

handover of control. For example, NFTs aim, through technological means, to artificially create rivalrousness. As they are non-fungible, they cannot multiply in the way a media file can – every attempt to copy creates a new object. Only the person who has them in their wallet has, at any given point in time, control over them, and if they are sold, this control automatically passes on to the buyer. It is this technological recreation of rivalrousness in the digital domain that made them a “ownership candidate” and the reason such great hopes are associated with them.

Creative industries’ feedback on proposed digital assets

As well as a large task for the judiciary, it is a large task for those utilising, creating, monetising, and stewarding digital assets within their creative practice to keep abreast of these potential changes. If enacted, the proposals will have a significant impact on all businesses and users operating within the digital economy. While

it may open up new business models, facilitate leveraging assets to raise capital, and clarify the status of digital assets in the context of inheritance or insolvency law . . . it also means that many businesses and organisations could find themselves over night new “owners” of assets they did not even know they had, which could also include new duties and obligations.

(Parry, 2022)

Business models may need to adjust to make the most of these new rights, and there may be new opportunities for monetisation of work or new obstacles to crucial aspects such as the supply chain.

To prepare businesses and creators for this future, and to ensure that their voices are heard as part of developments to ensure that resulting legal systems are fit for purpose, the DECaDE Centre for Decentralised Digital Economy together with Creative Informatics held two stakeholder forums online in October 2022, with the first focusing particularly on the needs of the creative industries (Creative Informatics, 2022; School of Informatics/Design Informatics, 2022). The forums were attended by 40 attendees, who were a mix of academic researchers and creative practitioners. The various feedback and discussion, gathered using a Reflection-In-Action approach (Schön, 1983), showed that the majority of attendees were favourable towards the principle of reform. Any criticism or disagreement voiced was mainly whether the proposal was far reaching and bold enough. The creation of a new form of property sounded radical and promising for many – but once the details became clear, in particular the limited applicability of the new category – there was with some participants a sense of disappointment. Similarly, there was a recognition that what is being proposed is in large part a restatement,

albeit a more systematic one, of what courts have already begun to develop. While the principle of a third category of property thus found widespread support, the proposed limitations created concerns, and, given the inevitable disruption due to the limited applicability of the new category, there was a sense that it may constitute a missed opportunity that still disrupts current experimentation with these technologies while failing to generate substantial benefits. This would particularly be the case if this revised regime introduces complexities for the cross-border transfer of assets with external jurisdictions such as Scotland within the UK and other entities beyond its borders. The Commission's alignment of its proposals with international advancements was thought noteworthy; indeed, the absence of action could potentially lead to analogous challenges as global dynamics evolve. Nonetheless, apprehensions surfaced regarding disparate developmental paces among different UK regions, particularly evident among stakeholders situated north of the border.

While based on valid considerations, the consolidation of jurisprudence on digital assets and the creation of a third category may inadvertently preempt more radical law reform endeavours prematurely or encumber future court-driven advancements in the field. The ostensibly abstract and overarching nature of the proposed third category warrants examination. It prompts inquiry into whether this framework is excessively tailored to a specific, contemporary technology – particularly one that comes with considerable costs, not the least its environmental impact (Truby et al., 2022). Consequently, it prompts reflection on the true technological neutrality of the proposal and whether it aptly supports the optimal technological trajectory or supports the needs of those operating within the creative industries.

Discussion

How do we solve a problem like reimagining property rights in the ever-changing digital sphere?

The clearest benefits from a statutory intervention regarding ownership and control in the digital economy would be by increasing legal certainty, in particular for people who cannot and do not follow the developments in the courts – such as software developers who will be tasked with building systems that have the type of functionality and affordances crucial for managing the status of digital assets. Providing certainty is crucial to support work in the creative industries, especially for smaller companies and ordinary users of the technology. In addition, allowing experimentation with new forms of control, including joint control, sharing, and openness towards multiple (though not unlimited) controllers is essential if we are to build a functional and evolving creative economy built upon data.

In addition, some of the more technical parts of copyright law could be updated, so that assignment of full copyright through a smart contract

becomes legally valid. Creating an immutable record of this transaction on the blockchain seems an adequate normative equivalent of a written contract. Trusted third parties could generate repositories of typical standard forms of copyright licenses: this would allow also legal and technologically unsophisticated users to see what type of rights they are acquiring. Clarification about the relation between the smart contract, and possibly contradictory terms on the platform that conducts the transaction, would also add legal certainty. This was the aim of the Smart Contract project of the French Ministry of Justice, which could provide an international blueprint.⁵ Tighter rules on advertising new technologies and their capabilities, especially by influencers, would be other low-hanging fruit to stabilise the digital asset environment and make it safer for creators and their customers.

Enacting legal changes to the ownership of digital assets in a way which is sympathetic to the needs of the creative industries will require a nuanced understanding and collaboration among legal scholars, computer scientists, and creative industry stakeholders, including creatives practitioners, content providers, and consumers, in order to shape the future of digital property rights and the creative economy. In addition, as this book stresses in Chapter 4, upskilling in data-led methods, including rights and legal frameworks, will be imperative if creators are to navigate this complex, and rapidly changing, terrain.

Conclusion

Opening up the conceptual space for new forms of ownership in the digital world is an important development to realign our current digital economy with ideals that are deeply embedded in our legal system. The creation of a new type of property – digital assets – is to be welcomed, and we broadly support proposed goals and solutions. It is indeed remarkable that the “fourth industrial revolution” – “the new era that builds and extends the impact of digitization in new and unanticipated ways” – (Davis, 2016) managed to prosper without a property regime for its most valuable assets. It may also open the way to new forms of expression or remuneration for the owners of digital assets and the creators who produce new products and services based upon them.

Much of what is currently proposed in changes to the existing property ownership framework consolidates existing creative solutions from the courts, and this may limit some of the disruption that some in the creative industries fear, also making it easier in cross-jurisdiction cases involving international legal systems. An alternative approach, however, which could offer more efficient resolutions to some legal challenges, would be to enact incremental legal adjustments, for example, updating technical aspects of copyright law and implementing stricter regulations regarding digital capabilities.

In either case, to ensure that those in the creative industries are provided with a workable and useful legal system regarding their digital and data-led products and services, their voices need to be heard as legislation is developed, changed, and enacted. Ensuring that the creative industries are aware of their data- and digital-related rights will require upskilling, communication, and support to allow creatives to make the most of their digital and data assets in this rapidly changing space.

Notes

- 1 <https://creativeinformatics.org>
- 2 https://decade.ac.uk/?page_id=227
- 3 <https://www.niftygateway.com>
- 4 <https://opensea.io>
- 5 <https://smart-contracts.univ-grenoble-alpes.fr/>

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CASE STUDY

Breaking new ground with ethically sourced audio AI: DataMind Audio and the development of the Combobulator

DataMind Audio¹ is a pioneering company that operates at the intersection of music and artificial intelligence (AI). Created by musicians for musicians – and led by electronic music producer, educator-entrepreneur, and technologist Ben Cantil – their mission is to produce innovative electronic instruments that leverage the power of AI to expand and augment human creativity and capability in the realm of sound design.

In 2022, DataMind were accepted onto the final round of Creative Informatics' Resident Entrepreneur programme, proposing to use the £12,000 grant to support their five-strong core team in developing a groundbreaking new AI plug-in, the Combobulator.

Using AI-models trained by Stability AI servers on audio from world-class music producers (such as Tipper, Max Cooper, and Mr. Bill), the Combobulator transforms a live audio signal to sound like the selected music producer's unique style. Whilst programming an AI to "hallucinate" an interpretation of an audio signal itself already represents a completely new paradigm for creative sound design, the plugin also comes with many modular controls that will be familiar to all synthesiser users.

During the development of the Combobulator minimum viable product (MVP), DataMind discovered noteworthy outputs, both positive and negative. One of the most significant discoveries was the innovative nature of their online marketplace for ethically sourced neural networks, which will create a new economic opportunity for artists in the AI space. By curating a collection of novel neural networks and establishing a global marketplace for AI-generative implementations of their work, DataMind Audio is providing a new income stream for music producers to earn royalties, addressing the financial insecurity faced by artists. This represents a significant market innovation and is garnering positive attention in the music software industry.

Furthermore, the idea of a neural network marketplace, where trained networks can be sold based on specific artist datasets, has broader implications beyond sound design. This concept could potentially be applied to other forms of media in various creative industries. As AI technologies rapidly expand and accelerate, DataMind Audio aims to actively participate in the conversation surrounding AI's applications in all creative industries.

Participating in the Creative Informatics Resident Entrepreneur programme has helped DataMind's team develop as researchers, audio specialists, artists, and community members. Mentorship was provided by Tinderbox Orchestra's

Luci Holland, whose ongoing guidance and expertise in the UK music industry proved an invaluable resource, providing astute insights which have helped position DataMind for success in the creative industry.

Following their involvement in the Creative Informatics programme, DataMind have produced two working plugins, both of which are in alpha testing at the time of writing.² Whilst their primary focus continues to be on further developing the Combobulator, in particular enhancing its security measures to ensure the protection of IP and user data and prevent any potential security or piracy risks, the team are also working on the Refractalizer, which employs granular synthesis techniques combined with AI neural audio synthesis. This represents another exciting avenue to expand the company's portfolio of cutting-edge audio plugins and provides a unique tool for music producers to explore innovative sound design possibilities.

In addition to the production of these tools, this project has also helped the company increase its knowledge and awareness of ethical considerations in the emerging field of AI creativity. Working with AI technologies raises ethical considerations around data privacy and ownership of generated content. The project has deepened the team's awareness and understanding of AI ethical issues and has helped them craft ethical policies for the company's use of artist content for data training.

DataMind are committed to paying royalties of 50% of sales of each model after the initial expense of training the model (£800–£1000) has been paid. On a wider scale, they hope to become a model company for generating ethical training data, working with artists in the AI music space to become the UK's premier ethically sourced AI neural audio software company. They intend to explore further opportunities in funding, marketing, research, and development to achieve these aims.

In November 2022, DataMind Audio Ltd was registered as a limited company. DataMind's initial press release about the tool was featured on the Mr. Bill podcast on March 23 (Mr Bills Tunes 2023). The Combobulator launched publicly in 2024. Whilst the instrument is now more dynamic and expressive than initially imagined, and additional features such as model blending and side-chain functionalities have been identified, further work on resolving inconsistencies in sound quality and processing power usage of models is being undertaken before its full unveiling.

Since their participation in Resident Entrepreneurs, the company has been successful in gaining a further £5,000 of R&D funding through Creative Informatics' Creative AI Music & Audio Pilot Project. Through this funding, they will retrain the Combobulator using an improved version of the current algorithm to enable the tool to scale more quickly and efficiently and reduce the likelihood of it being swamped by larger-scale competitors. They have also recently

been awarded £50,000 by Innovate UK to support several model reliability engineers, who will specialise in training the tool's neural networks in close collaboration with the artists whose styles they will be applying and with ethical considerations at their forefront.

Victoria Murray

Reference list

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Case study notes

- 1 <https://datamindaudio.ai/>
- 2 See the Combobulator alpha version MVP in action: https://www.youtube.com/watch?v=0qloj5gpz_c