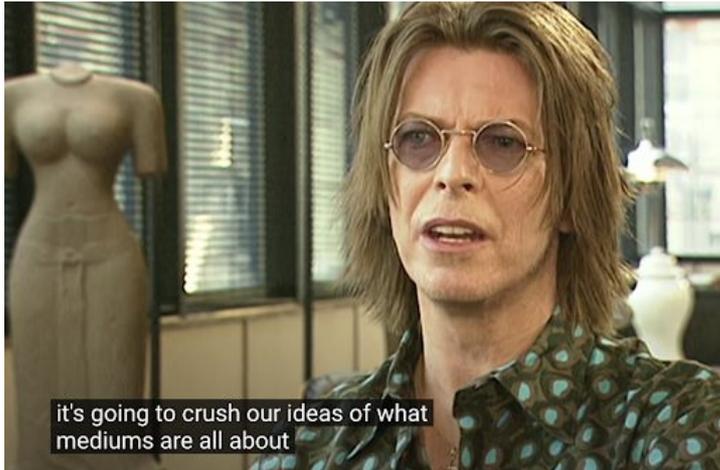It is 1999. David Bowie is interviewed by the BBC's political correspondent Jeremy Paxman. Apart from the music he created, Bowie was a hugely intelligent and thoughtful man. During the interview (you can watch it here) Paxman asks him about the internet, Paxman is scathing, "just a delivery mechanism".

it's going to crush our ideas of what mediums are all about

Bowie:

"......no, I don't agree. I don't think we have even seen the tip of the iceberg. I think we are on the cusp of something exhilarating and terrifying.

"The context and the state of content is going to be so different to anything we can really envisage at the moment, where the interplay between the user and the provider will be so in simpatico, it's going to crush our ideas of what mediums are all about."

Notice there is no compassion for the interviewer's opinion. Bowie destroys it and then provides one of the most prophetic statements about the internet yet. He is describing what has recently come to be known as Web 3.0.

Web 1.0: Read (1990-2005)
Which was pretty much true. All you could really do on the early internet was look at a website that either had news or the weather. You couldn't interact with it particularly.

Web 2.0: Read & Write (2005-2020)
Social Media & Chat. Particularly important here is that the provision of interaction between people drove enormous network effects and created massively powerful companies. The value is the *direct connection* between the people though, which is important.

Web 3.0: Read & Write & Own (now)
All of the above but now I can *own* digital content as well as read and write it. This is what Bowie predicted; now that I can claim what I have actually created as my own it will unleash hugely powerful creative forces. We are only just beginning to see this.

Music
Back to Bowie. He knew that the distribution mechanism provided by the internet would be big news for musicians. At first though, it was hard for them. Staying in 1999, Napster had launched and anybody around the world could copy music for free. It crushed the music industry until Metallica decided to sue Napster, they won and Napster was eventually liquidated.

Enter Apple with iTunes, Google with YouTube and finally Spotify. All had enormous and growing networks. They offered artists a way to share their music with the world but again the artists would lose because the overwhelming share of the revenue stayed with the network. Today, aside from the mega-artists of the day, it is very difficult for a musician to make a living from the income stream provided by the tech giants.

In-Simpatico
Bowie's prediction was that distribution would ultimately land with a mutually beneficial sharing arrangement. No middle-man, simply artist & listener.

In Web 3.0 an artist can now:
- Prove ownership of their music or art with a cryptographic signature
- Collect money outside of the walled gardens of Apple and Spotify by using digital currency
- Sell cryptographic tokens to fans that can be used to access back catalogs and new music

The key is the removal of the middle-man; the lawyers, managers, distributors and Apple. In music, distribution via a streaming service would yield an artist less than 10 cents in the dollar. Today, the artist can keep the lot and with an economic incentive so powerful they will, and they have as we will see.

Disney
Moving away from music. Let's briefly consider Walt Disney, arguably nobody creates more digital images than them. The company currently has 70 vacancies in its legal department. That's because the whole game for Disney is the enforcement of copyright. They have thousands of lawyers working for them enforcing their copyright around the globe. "We own this image, now pay us."

The first image of Mickey Mouse was produced in 1928 in a film called "Steamboat Willie". Imagine if Disney produced an NFT[1] of this image, signed it with their cryptographic key declaring "this image was always ours and this cryptographic representation is also ours".
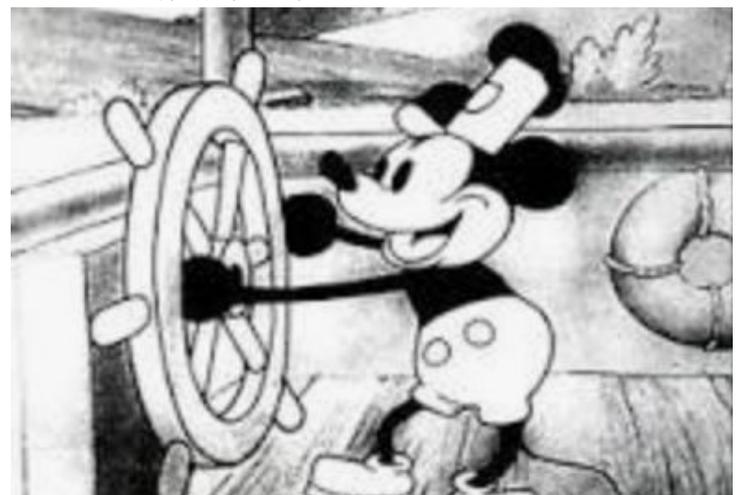
Now, Disney can do multiple things with that image. They can license it to websites with the correct cryptographic key (which they will need to pay for), they can sell copies (not the original which they will certainly keep) to the public.

Indeed, could every single frame of a Disney Movie be an NFT? Yes. Will Disney sell them? Not the originals, but 10 copies of each? 100 copies of each?

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[1] An NFT is a "non-fungible token". Fungible tokens are all the same, like US Dollars or bitcoins. Non-fungible tokens are all unique, like artworks.

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Even better for them if you then display the image on the internet and if you do not have the correct key they will sue you. Software will simply crawl the internet and websites will easily be able to validate originals and fakes. The software will do the work of their legal department. Cryptography wins over lawyers every time.

Disney films have about 1,500 drawings per two minutes of film. A 90 minute film has almost 300,000 drawings. If Disney created NFTs from them and sold 100 verified copies of the frames for $10 on average, that's $300 million per film, which is more than most of them gross at the cinema.

I would bet that the first ever NFT images of Mickey Mouse will sell for tens of millions of dollars.

The point here is that creators (and whether you like them or not, Disney is a creator) are going to have access to enormous new income streams thanks to the ability to directly monetise their own creations by proving that copies of the original version have limited circulation. It is not the same as a poster. Posters can be copied, cryptographically verified 1/100 copies of Mickey Mouse cannot and computers and software can trivially verify that fact.

Disney is just one example though, it's a mega-corp. A better example of Web 3.0 in art is perhaps provided in France.

Pascal Boyart

Pascal is a French artist who lives in an old gold foundry on the outskirts of Paris. He was one of the first artists in the world to include his bitcoin QR code on his artwork and rose to prominence through doing so. Throughout 2020 he painted a copy of the Sistine Chapel roof in the foundry. He then fractionalised the image into NFTs. You can see each NFT element called out in the image below.

The project in figures

- 1 artist alone.
- 1 fresco of 100m2 composed of 3 scenes.
- More than 400 characters.
- 5 months of work, ~ 700 hours (production from July to December 2020).
- 20K euros collected in cryptocurrencies, financed by 12 patrons from around the world.
- 1 modeling of the fresco in 3D.
- 404 NFTs of the finished work created by the artist.
- 1 documentary film on the genesis of the project and its realization, to come.

Each character (404 of them) was then sold separately as an NFT. Tech boffins will note the 404 reference. They are all here if you wish to browse, or indeed, buy one.

Pascal is no match for Michaelangelo and he wouldn't claim to be, but on average, his NFT's sell for about US$5,000. He has 404 of them with the most expensive one selling for US$370,000. Not bad for a guy that slept on the floor in 2017. He has made himself millions.

Top Selling The Underground Sistine Chapel by Pascal Boyart NFTs of the last 30 days

	NFT	Collection	Date	Price
1	050 - The confused angel	The Underground Sistine Chapel by Pascal Boyart	7 days ago	$9k
2	354 - A soul on the way to the underworld in Charon's boat 2	The Underground Sistine Chapel by Pascal Boyart	20 days ago	$5.7k
3	130 - The one-eyed	The Underground Sistine Chapel by Pascal Boyart	17 days ago	$5.5k
4	361 - A soul on the way to the underworld in Charon's boat 9	The Underground Sistine Chapel by Pascal Boyart	24 days ago	$5.4k
5	197 - The indelicate	The Underground Sistine Chapel by Pascal Boyart	4 days ago	$3732

That is Web 3.0.
- I can prove I own things by minting NFTs from the original
- I can sell them directly to the public for digital assets like bitcoin that are more fungible than art
- I capture the value as the creator, without lawyers, distributors, or middlemen
- You don't even need a bank account

Perhaps most fascinating of all, you will never know and never meet the people who bought the art, they are on the other side of a private cryptographic signature. True anonymous exchange.

Perhaps what is more remarkable is that a single French artist in Paris is so technically far in front of Disney, who haven't even begun on this journey.

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The Backbone of Web 3.0

The backbone of web 3.0 will likely be the well established digital assets like Bitcoin and Ethereum. The missing piece of the value jigsaw has for so long been the ability to collect money on a continual basis without the need to use credit cards or reside in an ecosystem that does the work for you, like the App Store.

Most people will want to be paid in the currency of highest credibility, that remains and likely will remain bitcoin. When it comes to minting NFTs and signing them, that ecosystem is up for grabs. It might be Ethereum, it might be something else given the costliness of transacting in ETH these days.

If you want to interact with web 3.0 try visiting opensea.io. That platform is actually a corporate entity so expect to see a decentralised version disrupt it quite shortly. You might also look at scarce.city, an auction site based on bitcoin's lightning network.

While you are exploring, ponder that these ecosystems are trading millions of dollars every day exchanging digital assets, rewarding creators and collectors alike and absolutely none of it relies on existing financial infrastructure. It is all anonymous, there are no fiat currency exchanges and there is no disclosure of who anybody is at any point.

Skeptics

The principal criticism I hear on web 3.0, in particular for NFTs, is that they are just jpegs (i.e. any old digital image). The implication being that this image is as valuable as the original in the Louvre.

We all know that is not true, because it is widely accepted that the original sits in Paris, no cryptography is required, almost no other art carries such provenance though. The point is that cryptography can validate originality, provenance, and also enable the restriction of supply of any particular copy of an image. This is particularly crucial in the digital age because computer code is uniquely good at validating cryptographic signatures. Fakes will not survive in digital ecosystems.

Twitter, Facebook, and websites will all commence NFT validation in the next few years. Take Visa, the payments company, who paid US$150,000 for this crypto-punk for their corporate art collection.

Why? Because the Punks are amongst the first ever NFTs. They aren't so much art, as history. This punk will likely be displayed on Visa's website in the next few years and your browser software will validate it as the original. You will think, "Wow, that's cool!" and you will wonder how you can get some neat artwork for your own company website to bolster your credentials. Not only will it happen, it has happened.

Finally

Bowie was right again, 1999 was the tip of the iceberg. We were indeed on the tip of something exhilarating and terrifying and we have had a dose of both since via the internet. There are reasons to be tremendously optimistic though. Most value creation comes from the connection between people, perhaps all of it. Web 2.0 provided that, but the value was captured by Google, Facebook and Apple. All power to them, they did an outstanding job even if just to show people what was possible.

Web 3.0 is different. There is now a strong likelihood that users will start owning their own content and the platforms they reside on. They will receive micro-payments for the things they do and provide. Artists will continue to go direct to market, as you have seen. Many millionaires are being created as the *direct* reward for effort. The number of connections in the economy between individuals will absolutely explode as we all circumvent the big aggregators like Apple and YouTube and potentially, for many people, their own employers. It will likely be an exponential curve of creation but not before we hear from the naysayers, so prepare for resistance before the explosion.

Predictions about where we are going will likely be both wrong and underestimate the amount of economic value this will unleash. In the Web 2.0 era it was very obvious that massively valuable networks had been created, just check the market cap of the big tech companies. In Web 3.0, save for the base layer protocols, like Bitcoin and Ethereum, it will perhaps be much less obvious as the rewards are far more widely spread. Who knows, or cares, that some random French guy made a few million? Nobody. Except him (and now you), which is entirely the point of Web 3.0.

One final point, we have used art and music in our examples because they are easily understood. They are equally applicable to other sectors, in particular finance, which is uniquely suited to administration via software and digital currency. If you are thinking of careers, times are changing. It once paid to be an investment banker rather than an artist, not so any longer. For those who remain on the sidelines or are simply just interested. Try buying an NFT then house it in a frame and display it in your house or office. You won't go back and neither will cryptography. The genie is well and truly out of the bottle.