

**Architecture as art in metaverse**

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Zurich 27-03-2022

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## 1. Introduction

Mike Winkelmann became a two digit millionaire a year ago, on March 11, 2021. He sold “Everydays: The First 5000 Days” an NFT of a digital collage. The work of the self declared graphic designer (is this a preliminary stage to visual artist, one may ask) was sold in auction at Christie’s for 69.3 million USD. This sale leads to the definition and understanding of **art** in virtuality.

An **NFT**, short for non fungible token, is

*“a non-interchangeable unit of data stored on a blockchain, a form of digital ledger, that can be sold and traded. (..) NFT ledgers claim to provide a public certificate of authenticity or proof of ownership, (..).”<sup>1</sup>*

In 2014 the first NFT was created by Kevin McCoy and Anil Dash of a video clip made by Jennifer McCoy and sold for 4 USD. The transaction was referred to as “monetized graphics”.

Between 2014 and 2017 Ethereum blockchain produced Etheria NFTs which were hexagonal tiles that only sold in 2021 when NFT hype unfolded. Crypto Punks, rare Pepe trading cards and of course CryptoKitties brought attention to NFTs. But only 2020 the market took up speed and the total value of sales raised to 250 million USD, ever since still rapidly increasing.

NFTs are used in digital art, in games of course, representing in-game assets such as digital plots of land, in music as a combination of artwork and music, in film, where posters are sold as NFTs, and as well as so called internet memes. Varieties of use of NFTs evolve to any imaginable item that can be traded. The sense of NFTs as a guarantee of

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<sup>1</sup> [https://en.wikipedia.org/wiki/Non-fungible\\_token](https://en.wikipedia.org/wiki/Non-fungible_token)

ownership leads to many more markets than only the art market which obviously evolved the use and spread of NFTs and still has a major impact on the scene. In 2020, practically out of the blue, the interest of art collectors in NFTs rose to 33%.

With the rise of NFTs in art market the use of so called **metaverse** was enhanced as well. Metaverses defined as 3D virtual worlds are mainly referred to as gaming platforms such as *Second Life* or *Decentraland* and *Sandbox*. Virtual worlds are about to be built by different market players such as Meta Platforms (former Facebook), HTC with Viverse etc. The expected applications for metaverse will include interactive learning, e-commerce, real estate, art and luxury brands. Augmented reality can be achieved by adapted hardware such as VR headsets including sensors and high-definition displays.

NFTs as a guarantee of ownership get implemented in metaverse to make items tradeable independently from the game creator. These NFTs can be implemented to the metaverse, can be used and shown in virtual reality but can be transferred and traded independently and according to exclusive decision and direction of the wallet user, who presumably owns the content of the wallet such as blockchain based currency and NFTs.

The more traffic is generated on in metaverse environment the more interest goes to the looks and feels of the space. How can you stand out in a virtual environment and how can you attract the businesses and audience you want in order to see and sell your NFTs. This is where *architecture* finally comes in. This is where the creation of the metaverse by game designers finds a limitation. The looks and feels of metaverse as of today are basic, driven by gamers as visual effects seeking customers, and all quite present the same level of aesthetics, if one can think of this word in combination with basic metaverse applications such as *Decentraland*. However the interest of the users create the need of architectural work in metaverse. Questions such as social function, design,

aesthetics, phenomenology, semiology and style want to be discussed<sup>2</sup>. And this is the thinking and the work of an architect<sup>3</sup> (FN Zumthor, thinking architecture). This leads us to the question what architecture as art in metaverse is. And beyond this, what architecture as art in metaverse can and should provide.

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<sup>2</sup> Patrik Schumacher, *The Autopoiesis of Architecture*, Jon Wiley & Sons Ltd., 2011

<sup>3</sup> Peter Zumthor, *Thinking Architecture*, 3<sup>rd</sup> Edition, Birkhäuser, 2010

## 2. Approach by definition

An academic way of understanding and finding conclusions can be reached by defining the relevant subjects of interest in order to present the common and differing aspects and to clarify the understanding and meaning of a defined subject. We need to ask ourselves what our perception of art is to find out whether we conceive architecture as art, and under which circumstances. This may lead to the understanding that the question is more or less of relevance. However the implementation of the defined subjects into a new and quite unknown world, which metaverse is, again needs boundaries and definition. This is why starting with definitions seems the right approach to learn and understand how far we can get with our perception of architecture as art in metaverse. Is architecture art? And whether or not, what is the scope of architecture in metaverse.

### 2.1. Definition of art

There are so many definitions and explanations of art. And none of them was generally sufficient to become the one and only explanation that can be accepted as common perception of art. Maybe this is the miracle and glam of art, that it is as wide as fantasy can reach and as flexible as human thoughts can be. Some definitions worth mentioning go back to the great philosophers such as Plato, and later Kant and Hegel<sup>4</sup>.

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<sup>4</sup>*Plato*: In the Republic, Plato says that art imitates the objects and events of ordinary life. In other words, a work of art is a copy of a copy of a Form. It is even more of an illusion than is ordinary experience. On this theory, works of art are at best entertainment, and at worst a dangerous delusion. ([www.rowan.edu](http://www.rowan.edu)).

*Hegel*: The principal aim of art is not, therefore, to imitate nature, to decorate our surroundings, to prompt us to engage in moral or political action, or to shock us out of our complacency. It is to allow us to contemplate and enjoy created images of our own spiritual freedom—images that are beautiful precisely *because* they give expression to our freedom. Art's purpose, in other words, is to enable us to bring to mind the truth about ourselves, and so to become aware of who we truly are. Art is there not just for art's sake, but for beauty's sake, that is, for the sake of a distinctively sensuous form of human self-expression and self-understanding. (Stanford Encyclopedia of Philosophy, Hegel's Aesthetics, 2020, [www.plato.stanford.edu](http://www.plato.stanford.edu)).

*Kant*: Kant has a definition of art, and of fine art; the latter, which Kant calls the art of genius, is "a kind of representation that is purposive in itself and, though without an end, nevertheless

Probably each person of relevance in history had an opinion on art and maybe even a definition.

Following a famous citation by Pablo Picasso that “art is the elimination of the unnecessary” it seems acceptable to choose one particular definition of art that found a large acceptance in academia and is wide enough to be used as parameter for the distinction of objects as work of art. It is the definition by Susanne K. Langer<sup>5</sup>, a renown philosopher of the last century, that reads:

***“Art is the creation of forms symbolic to human feeling.”***<sup>6</sup>

Langer concludes in her studies that the symbol is the object that derives from the fusion of signification and sensibility. Culture in general refers to patterns that have symbolic functions and can be understood as a categorization of reality by human mind. Work of art simply adapts and implements symbols which are the concept of understanding creativity.

Langer refers to Cassirer, who defines symbols as follows:

*“Man lives in a symbolic universe. Language, myth, art and religion are parts of this universe. (...) Instead of dealing with the things themselves man is in a sense constantly conversing with himself. He has so enveloped himself in linguistic forms, in artistic images, in mythical symbols or religious rites that he cannot see*

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promotes the cultivation of the mental powers for sociable communication” (Kant, *Critique of the Power of Judgment*, Guyer translation, section 44, 46). (Stanford Encyclopedia of Philosophy, The Definition of Art, 2018, [www.plato.stanford.edu](http://www.plato.stanford.edu)).

<sup>5</sup> Susanne Katherina Langer (1895 –1985) was an American philosopher, writer, and educator and was well known for her theories on the influences of art on the mind. She was one of the first women in American history to achieve an academic career in philosophy and the first woman to be popularly and professionally recognized as an American philosopher. Langer is best known for her 1942 book *Philosophy in a New Key* which was followed by a sequel *Feeling and Form: A Theory of Art* in 1953.

<sup>6</sup> Susan K. Langer, *Feeling and Form, a Theory of Art developed from Philosophy in New Key*, London/Oxford,: Routledge & Kegan Paul, 1953, p. 40

*or know anything except by the interposition of this artificial medium.”<sup>7</sup>*

*“Signals and symbols belong to two different universes of discourse: a signal is a part of the physical world of being, and a symbol is a part of the human world of meaning.”<sup>8</sup>*

The sign which simply indicates an expected rational behavior differs from the symbol as far as a conception is added to the purely physical world. A thought, an emotion or intuition is added to the mechanical perception of a statute and a reflexion, a feeling or a context appear to the individual based on personal and maybe even archaic memorized impressions.

The word “Sinnbild” does refer to this explanation of art. “Sinn” stands for sense as purpose and sense as the five physical senses of the human, whereas “Bild” refers to the simple form of pictorial art such as drawings, paintings and photographs, however two dimensional expressions in the form of a picture. Art can therefore be understood as “Sinnbild” of the reality we perceive.

Art as a creation of forms symbolic of human feelings is a valid definition when it comes to utilitarian objects that are perceived as work of art. The urinal by Marcel Duchamp<sup>9</sup> is a wonderful example of a daily object that was simply exhibited without any indication on the meaning or sense but was perceived as art due to the fact that the artist chose the object and presented it as art. Such conceptual art only functions if the form, and the form giving by choosing the object, perpetuates an emotion whether

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<sup>7</sup> Ernst Cassirer, *An Essay on Man, An Introduction to a Philosophy of Human Culture*, New Haven, Yale University Press, 1944

<sup>8</sup> Ernst Cassirer, *An Essay on Man*, 51

<sup>9</sup> Marcel Duchamp (1887 – 1968) was a French-American painter, sculptor, chess player, and writer whose work is associated with Cubism, Dada, and conceptual art.

explainable or not. To declare conceptual art and ready made as art, Langer's definition as well applies successfully.

However, there are counter tendencies explaining that art needs to be understood in a certain period and theory. This leads to concepts which seem to be useless to the understanding of art. Yes, there are concepts and even many different ones:

*“Danto argues that some object is a work of art only when the object is viewed under some socio-historically embedded art theory – or an ‘artworld’. Moreover, the identity of works, their meaning, and whatever artistic and aesthetic properties they might have also depend on their being viewed under some art theory. Danto’s argument may seem to demand that we cannot eliminate the concept art as certain ways of valuing an object must surely depend on a theory of art.”*<sup>10</sup>

But they are not mandatory to the understanding of a work of art as such:

*“We examine one recent attempt, which holds that the correct account of art must recognize the plurality of concepts of art. However, we criticize this account of concept pluralism as being unable to offer an explanation of why some concept is an art concept. Instead, many of the disagreements over the definition of art could be reconciled by recognizing that works of art can be valued in a plurality of ways. By recognizing a plurality of values for*

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<sup>10</sup> Bartel Christopher and Jack M. C. Kwong. 'Pluralism, Eliminativism, and the Definition of Art.' *Estetika: The European Journal of Aesthetics* LVIII/XIV, no. 2 (2021): pp. 100–113., citation of Arthur Danto, 'The Artworld', *Journal of Philosophy* 61 (1964): 571–84, and *Transfiguration of the Commonplace* (Cambridge, MA: Harvard University Press, 1981). Reference to Arthur Danto, "The Artworld", *Journal of Philosophy* 61

*art, we claim further that the definition of art becomes a non-issue.»<sup>11</sup>*

Whether we completely eliminate the definition of art due to the plurality of concepts or if we stick to the understanding that certain form nourishes certain feelings, does in the end effect lead to the same understanding that art needs to be felt more than understood and that an object of use can be as much art as a completely useless work in the sense of applicability.

Where does that lead us when it comes to architecture as art.

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<sup>11</sup> *ibid.*

## 2.2. Definition of architecture as art

The definition of architecture is as philosophic as the question on what art is. As much do the answers divert and as much not one definite answer can be found. We again strive through different perceptions without claiming truth or absolute validity for one but intend to open thoughts and possible ideas on a definition that finally leads to understand the concept of architecture as (a form of) art.

Google dictionary<sup>12</sup> gives the following two definitions for architecture:

1. The art or practice of designing and constructing buildings.
2. The complex or carefully designed structures of something.

Wikipedia<sup>13</sup> similarly cites:

*“Architecture (..) is both the process and the product of planning, designing, and constructing buildings or other structures. Architectural works, in the material form of building, are often perceived as cultural symbols and as works of art.”*

And further:

*“Historical civilizations are often identified with their surviving architectural achievements. The practice (..) has been used as a way of expressing culture (..). For this reason, architecture is considered to be a form of art.”*

*“Architecture is a passion, a vocation, a calling as well as a science and a business. It has been described as a social art and also an artful science. Architecture must be of the highest quality of design. Architecture provides, in the words of Marcus Vitruvius, the great Roman architect and historian, “firmness, commodity and delight”. ”<sup>14</sup>*

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<sup>12</sup> <https://search.yahoo.com/search?ei=utf-8&fr=aaplw&p=art+definition>

<sup>13</sup> <https://en.wikipedia.org/wiki/Art>

<sup>14</sup> [https://medium.com/@AAA\\_Publication/what-is-architecture-1b52f5339c2a](https://medium.com/@AAA_Publication/what-is-architecture-1b52f5339c2a)

Firmness understood as structural integrity, commodity as functionality and delight as aesthetically pleasing.

Architecture as a form of art, for our considerations shall be reduced to the construction of building architecture, excluding architecture as a structure, such as software or similar systems.

If we go back to the here chosen definition of art that we want to challenge, “*art is the creation of forms symbolic of human feeling*” we automatically direct our attention to the word “form” when it comes to architecture. Architecture as form giving expression, by definition form captured work, is per se the creation of forms. Form as the visible shape of something, the appearance or manifestation, is strictly bound to constructions which all architectural works are. We cannot think of architectural work that is not manifested as a construction due to the fact that it needs to be at least visually perceptible, although not necessarily tangible, which will be further discussed when coming to architecture in metaverse. So, form as a visible manifestation of construction is key element of architecture. Whether the form now is symbolic to human feeling and therefor qualifies as art is the question that needs to be evaluated.

*«Form follows function is a principle associated with modern architecture and industrial design in the 20th century. The principle is that the shape of a building or object should be primarily based upon its intended function or purpose.*

*Architecture is not merely a slavery to the past art, not is it blind originality. It has to be a perfect blend usability, beauty and economy. Architecture has always been the result of the delicate balance between art and science... but it has been more of an Art than science. An Architect is an artist who sets out to remodel the world to make is more perfect for human habitation...*

*The personality of an architect is reflected through his creations. We can gauge his temperament by looking at the way the structure is designed, both internally as well as externally. An architect takes care of human need, interests, sentiments & values of his clients while designing the structures...»*<sup>15</sup>

Susanne Langer, whoms definition of art is referred to, describes the particularity of visual forms as follows:

*“Visual forms – lines, colors, proportions, etc. – are just as capable of articulation, i.e. of complex combination, as words. But the laws that govern this sort of articulation are altogether different from the laws of syntax that govern language. The most radical difference is that visual forms are not discursive. They do not present their constituents successively, but simultaneously, so the relations determining a visual structure are grasped in one act of vision.”*<sup>16</sup>

The act of vision is the moment where the spectator perceives the allegation to human feelings that the artist creates. Renown architects try to embed exactly this sensitivity into their buildings. Peter Zumthor describes his approach to architecture in his outstanding work “Thinking Architecture”<sup>17</sup>. He start with the sensations he lived as a child regarding architectural forms that he memorizes and tries to remember in the embedded architectural situation:

*“I try to recollect what the remembered architectural situation was really like, what it had meant to me at the time, and I try to think how it could help me now to revive that vibrant atmosphere*

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<sup>15</sup> [www.architecture-student.com](http://www.architecture-student.com)

<sup>16</sup> Susanne Langer, *Philosophy in a New Key. A Study in the Symbolism of Reason, Rite, and Art.* Cambridge (Mass.), Harvard University Press, 1942

<sup>17</sup> Peter Zumthor, *Thinking Architecture*, Birkhäuser, Basel Boston Berlin, 2010

*pervaded by the simple presence of things, in which everything had its own specific place and form. And although I cannot trace any special forms, there is a hint of fullness and of richness which makes me think: this I have seen before. Yet, at the same time, I know that it is all new and different, and that there is no direct reference to a former work of architecture which might divulge the secret of the memory-laden mood.”<sup>18</sup>*

The sensation that made Peter Zumthor experience architecture was a memory that had at the time evoked a feeling, probably positive, as he searches to somehow recreate this emotion in his creative process. The question arises where the positivity comes from and here again one is tempted to refer to the understanding of archaic structures in our mindset that lead to handed down emotional experiences that can not be found in our own lived past<sup>19</sup>.

So, although form follows function and the language of architecture as a visual perception is limited to an immediate approach, evolvment by discourse, form intends to be more than just deducted from function.

What is our understanding of architecture if we reduce it to a very simple form of shelter, maybe transposed by wood as the only disposable material. We look at a simple wooden hut, for example as presented at Art Basel 2021 at the entrance to Liste art fair. Such a hut has made it to the world's most famous art fair. We shall presume that it is art because of the exhibition site already. But if we would see the same hut somewhere in wilderness it would be a utilitarian object, a shelter for the people living in the jungle. Would we then suggest this being art? Probably not. That leads us to rethink the concept of conceptual art and understand that architecture always, and by definition, produces objects that

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<sup>18</sup> *ibid.*

<sup>19</sup> Remarkable that C.G. Jung, one of the great researchers on archaism, was very much involved in the building of his home on Seestrasse in Küsnacht Zurich: “The house of Carl Gustav Jung is without a doubt the physical expression of a great mind.” *Architecture of the Soul: Inner & Outer Structures of C.G. Jung*, Andreas Jung, 2011

are utile because architecture per se creates housing structures that are defined by shelter and safety aspects. The other way round, architecture demarcates from plastic arts by the *use* as a building. If the creation does not qualify as building, defined as structure with a roof and walls, it is a sculpture.

So does the building, as the useful structure that architecture produces, qualify as art? The answer lies in the common wisdom of “it depends”. It depends on the intention of the artist if we follow the rules of conceptual art, it depends on the perception of the viewer and there on the individual understanding and taste. And again, it is meant to trigger a feeling if we stick to the chosen definition of art. Form in it’s perception, as Zumthor explains, refers to memory, whether personal or archaic, that resurrects certain emotions. This resurrection or creation of a certain condition one can live, is the particular expression of architecture. This creation therefore definitely qualifies as art because it goes beyond housing as it includes the sensitivity to make a human feeling perceptible by the viewer and the user of the dedicated form.

However, one can conclude that the definition of architecture as art can be considered of neglectable relevance if we follow the outcome of the discussion on pluralism of art definitions<sup>20</sup>.

We can define what we believe the add-ons to a simple building shall be to make it art but then again this only seems useful when it comes to concluding as necessity for such in order to improve a development. In other words, we shall look at metaverse and then define what architecture’s scope is meant to be in virtuality to then conclude if the criteria of architecture as art applies.

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<sup>20</sup> See p. 9 and references.

### 2.3. Metaverse

Although there is no officially recognized single definition of the word metaverse all definitions go back to the invention of the word with Neal Stephenson's science-fiction novel "Snow Crash" in 1992. The metaverse in the novel is a parallel virtual world where avatars live through virtual reality equipment.

Today's common understanding of metaverse is a computer-generated world with a consistent value system and an independent economic system linked to the physical world<sup>21</sup>. It is also a universal virtual world focusing on social interaction, which connects multiple 3D virtual environments via the Internet<sup>22</sup>. And: *"a metaverse is a network of 3D virtual worlds focused on social connection."*<sup>23</sup>

Metaverses that exist and are known to a larger number of users are computer games such as Decentraland, Sandbox, Fortnite or Second Life. The avatars that you can "play" in this virtual reality have options and abilities according to the game creators.

*"The metaverse integrates a variety of emerging technologies. In particular, digital twin produces a mirror image of the real world, VR and augmented reality (AR) provide immersive 3D experience, 5G and beyond offers ultra-high reliable and ultra-low latency connections for massive metaverse devices, wearable sensors and brain-computer interface (BCI) enable user/avatar interaction in the metaverse, artificial intelligence (AI) enables the large-scale metaverse creation and rendering, and blockchain*

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<sup>21</sup> Yuntao Wang et al., A Survey on Metaverse: Fundamentals, Security and Privacy, Cornell University 05-03-22

<sup>22</sup> Ruizhi Cheng et al., Will Metaverse be NextG Internet?, Cornell University 30-01-22

<sup>23</sup> <https://en.wikipedia.org/wiki/Metaverse#:~:text=A%20metaverse%20is%20a%20network%20of%203D%20virtual,the%20use%20of%20virtual%20and%20augmented%20reality%20headsets>.

*and non-fungible token (NFT) play an important role in determining authentic rights for metaverse assets.*<sup>24</sup>

The development of the metaverse goes in phases and can be explained as follows<sup>25</sup>:

- *Phase 1*: There is a real world and a virtual world which have no overlaps, but virtuality is a twin of real life. All virtuality is an imitation of the real worlds. One perceives two parallel spaces. Academia talks of *digital twins*. A great example is “Omniverse” a fully functional digital twin of a BMW automobile factory that was used to increase productivity in the real factory.
- *Phase 2*: Physical world and virtual world partially overlap. *Digital natives* can present innovations and creations that only exist in the virtual world through their avatars. The virtual world can impact real life and create more intersections between the two spaces. Valid example for this overlap is the use of a digital marketplace or a digital communication system such as Microsoft Teams.
- *Phase 3*: So called *surreality* appears when virtual and real world become congruent. Reality gets assimilated with the plus of seizing more lifes and scenes than in real life. This will happen when we start to effectively live in the extended reality longer and more intense than in our physical surrounding.

Metaverse however melts physical, human and digital world presuming the following characteristics that are decisive for the use and sense of metaverse<sup>26</sup>:

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<sup>24</sup> Yuntao Wang et al., A Survey on Metaverse: Fundamentals, Security and Privacy, Cornell University 05-03-22

<sup>25</sup> *ibid.*

<sup>26</sup> *ibid.*

- Metaverse shall make users live *immersive realism*, which means they shall feel the world they immerse into also psychologically and emotionally.
- Limitation of time and space do not exist (so called hyper *spatio-temporality*).
- Economy with value system and independence of such grants *sustainability* by creating metaverse that is not controlled by powerful actors, but functions on a decentralized architecture.
- Further metaverse needs to become *interoperable*, which is actually the most challenging step builders currently undergo besides the necessary accessibility of metaverse by common devices such as mobile phones.
- *Scalability* can only be reached if the number of participants and the level of complexity remain sufficient.
- The diversity of human psychology needs to be transferred and grant *heterogeneity* of metaverse.
- *Security, privacy and legal* issues need to be addressed.

If one follows big players such as Apple and Microsoft their understanding of the use of metaverse is quite simple: the purpose to use virtual space is to try out different ideas and projects with less cost impact and the goal to improve productivity in the real world. The production section of the market obviously understands metaverse as a digital twin where one tries out virtually what can be implemented in reality without losing cost and time as in real life. Meta, and other players in the gaming, socializing and leisure area, use metaverse as digital natives implementing direct use in virtuality and at this stage only very futuristic entrepreneurs such as metaverse creators and developers believe in surreality.

For the actual status in 2022 we can however summarize that without specific hardware devices such as VR headsets (or even sensor enabled suits which are still in preliminary development phase), the immersion to metaverse by interactive use is very limited and therefore applications are quite simple and reduced to two senses: seeing and hearing.

Consumers cannot smell, taste or touch in common metaverse applications, which is easily forgotten due to the presumption we get from science fiction movies etc. Fact is, that metaverse is about to evolve at a very rapid pace but still is limited to the level of computer games.

### 3. Approach by actual status in metaverse

Overviewing the implementation of art in metaverse first we continue our research on architecture in metaverse and then conclude whether architecture in metaverse can be seen as art and what the outcome of this finding may be.

#### 3.1. Art in virtuality

To make art perceivable in metaverse it is mandatory to have art on data whether the original is data based or not. The common way to share art in virtual world has become by NFT. Of course simple projection of pictures of art or videos of such is possible as unprotected data but does not make sense when it comes to trading the art work.

Since 2017, when NFTs started to spread, the art market took advantage of this data storage system. Rumor spread, that through NFTs one could protect a work of art, guarantee ownership and prevent unlawful copyright. That these options exist with the minting of NFTs is indisputable, but as well given is, that the underlying smart contract has to regulate all the mentioned details for these to be binding<sup>27</sup>.

However, the art market accepted NFTs in an impressive way<sup>28</sup> and with the increasing interest of crypto-rich, young collectors, even established players such as Sotheby's and Christie's implemented NFTs to their offers. The art market simply had to open up to new marketplaces, such as opensea.com and more art driven ones as SuperRare or similar. These new marketplaces intend to be transparent, reliable less snobby and tent to democratisise the art market, understood as making it reachable for everybody.

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<sup>27</sup> We simply omit the question of enforceability of the stated contractual rights due to the unsolved question on applicable law and jurisdiction.

<sup>28</sup> Probably also due to the pandemic driven focus on the Internet commerce.

The following key figures give an impression of the value of the NFT market<sup>29</sup>:

- The complete value of NFT sales in 2020 was \$250 million.
- The first NFT was created in 2014.
- More than 50% of NFT sales are less than \$200.
- 250,000 people trade NFTs every month on OpenSea.
- CryptoPunk NFT sold for \$532 million in 2021<sup>30</sup>
- The most expensive NFT ever sold is “The Merge”, sold for \$91.8 million. Nearly 30’000 buyers participated with small size tokens.
- Beeple who sold his NFT “The first 5000 days” for nearly \$70 million with Christie’s now sold his first physical artwork for \$28.9 million at Christie’s.

Further we can distinguish sections of art that are available as NFTs and get traded on marketplaces or in auction houses:

a) Fine art

Fine art is restricted, for the purpose of this distinction, to visual arts such as paintings, photography and sculpture. Fine art works can be scanned or otherwise captured as data of which NFT can be minted<sup>31</sup>. NFTs need to be connected to a virtual wallet from where they can be transferred to another wallet. NFTs are presented and sold on marketplaces, whether by fixed price, direct offer or bidding auction.

For fine art the data showing the piece of art can be the sole content of the NFT. The buyer then simply acquires a picture of the original art work. What is more interesting is the combination of the sale of NFT

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<sup>29</sup> [https://assets.ey.com/content/dam/ey-sites/ey-com/en\\_ch/topics/blockchain/ey-nets-in-the-spotlight-1-0.pdf](https://assets.ey.com/content/dam/ey-sites/ey-com/en_ch/topics/blockchain/ey-nets-in-the-spotlight-1-0.pdf)

<sup>30</sup> So called «wash trade» was suspected which is a market manipulation that does not include a real sale.

<sup>31</sup> To mint is the commonly used verb that explains the production of an NFT by locking a digital artwork on the blockchain by a public ledger that gets stored in a decentralized database.

together with the original of the art work. This implements that you buy an NFT with the picture of the fine art plus the original, which is stated in the underlying smart contract<sup>32</sup> explicitly stating that the original does belong to the owner of the NFT. That is a declaration of ownership right, as valid as a written contract itself. The only difference to the written contract is, that transfer of ownership can be done by transfer of NFT, so even without revealing identity of the parties. No further sale contract with the second buyer is necessary. However, the connection between the ownership as a right and the object itself is not solved by minting a NFT. There must be an attached wallet number for example on the backside of the original art work that may sufficiently proof that the particular piece of art is meant, which is quite easy to manipulate.

Selling fine art by NFT still brings many uncertainties on transfer of ownership and provenance of work and therefore does not seem to be the upcoming market invention, at least not at this stage.

In Sotheby's auction "Natively Digital" in June 2021 not one fine art work was presented. The NFTs can all be considered digital art. Of the overall 147 NFTs at Sotheby's many are watch designs (Gérald Genta) that are accompanied by NFT, one is a worn T-Shirt by late football star Kobe Bryant and there is even a NFT with AI data Sculpture<sup>33</sup>. The source code of the world wide web was sold as NFT. Even one pair of jewel earrings was sold with NFT certificate of authenticity. A total of 6 prints of crypto punk NFTs appear under NFT section to complete the rare combination of NFT with physical work.

Christie's is far further with their NFT sale and even has a section "Christie's encrypted". There range of NFT covers digital art, post-war and contemporary art, 21<sup>st</sup> Century and they even launched an

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<sup>32</sup> A smart contract is a digital contract where terms of agreement between users is set in code on decentralized and distributed blockchain networks. It can be programmed to self-execute when a set of predefined conditions are fulfilled.

<sup>33</sup> Machine Hallucination: Synthetic Mars Terrain by Refik Anadol

Art and Tech Summit. Anything can be NFT-ed with Christie's it seems.

#### b) Digital art

This art form uses digital technology to create the art work or to present the art. It belongs to the section of new media art. Digital art is practically contemporary art that uses methods of mass production or digital media<sup>34</sup>. The constraints of digital art, multimedia design and graphic design are floating. Digital art that is purely computer-generated labels as fractals or algorithmic art.

The digital art work can be itself an NFT or can be associated to an NFT. Due to the limitation of data size in NFT some digital art needs to refer to bigger sets of data in the NFT to allow full perception of the art work.

Digital art is the native form of NFT art, but not the sole one. It is expected that digital art will live a hype and production increases with the growing interest in NFT.

#### c) Collectibles

This NFT specific works originally derive from the playing card collections. The same collecting system as with playing card or for example Pokemon cards applies to collectibles. The probably most famous series of collectibles is CryptoPunk by Larva Lab. They are 10'000 uniquely generated characters, of which none is the same. Ever since they were sold out the secondary market flourishes as the number of sales in 12 month nearly reached 10'000 with a total value of sales in exemplary 4 weeks rose up to over 80m USD.

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<sup>34</sup> [https://en.wikipedia.org/wiki/Digital\\_art](https://en.wikipedia.org/wiki/Digital_art)

The “system” of collectibles is upcoming and interesting to follow as the price of the work is the only measurement one can have on the value. Statistics show how rarity and scarcity influence sales in this market. But one needs to question whether these works are meant to be understood as art. Collectibles often come with incentives such as club membership, events or even investment opportunities. Common understanding of virtual art however seems to include collectibles and we shall leave it to further discussion what the overall sense and meaning of collectibles might be.

### 3.2. Architecture as art in metaverse

Starting from the short overview on the types of art we find as NFTs and therefor perceivable in metaverse, the question arises if and how architecture can be art, preferably protected by NFT, that can be traded in the art market. Architecture in metaverse can be understood as two different things:

- Architectural visuals such as renderings, plans, models, that are art in itself.
- Buildings in metaverse that qualify as architectural art.<sup>35</sup>

There are architectural drawings, renderings, pictures and of course 3D models, videos and even plans that can qualify as art. On the main marketplaces for NFT one does not find a specific section for architecture, but some architectural works have been minted and traded for example on Opensea marketplace. For each the question arises whether they can be classified as architecture or architectural work and secondly whether the work is art or graphics or nothing of each. The mixture on the market is huge and confusing.

Many of the architectural works refer to land plots in the metaverse and marketplaces refer to “virtual worlds”. Virtual real estate is presented under this category as well as simple plots. The houses look more or less like the ones you find in real life. They have a swimming pool and often cubistic simplified style. As metaverses are built as copies of real life, presuming there is size and gravity, even selectable climate and lightning conditions, the architecture of course follows real life models as well. What a pity. Even real-life real estate starts to be sold as NFTs. Such works simply enlarge the real estate market and try to ease tradability but have nothing to do with art or architecture as art.

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<sup>35</sup> Here the same criteria may apply for the definition as art as in real life. Distinction to simple housing.

Furthermore, architecture in extended reality needs to apply to the given circumstances, such as low qualities of visual perception if the goal is to reach a large audience. The technical applications are limited by the devices of the users and nevertheless the interest, expression and sense that the client or owner of the building wants to perceive is what needs to be met with the translation by the architect into a room and space creation. This fundamental understanding of the circumstances are what makes the work of an architect become art beyond craft. And for this ability there is need and room just as much in virtual life as in real space.

#### 4. Conclusion

If we think about architecture as art in metaverse we can consider a much wider range of possibilities. Metaverse is not bound by the settings of real life. Actually there is no size, unless self defined, there is no gravity, no climate, no setting or landscape in which to fit, nothing. The only boundary is set by the fact that human should be able to profit from the metaverse they login to which implicates a certain orientation in space and time, however negotiable.

Architecture as a form of art can touch the viewer by many sensations and through different sense is far more invasive and powerful on humans than for example a canvas painting can be. Architecture can be seen, touched, sometimes even smelled (according to the material chosen to built), and heard (think about echoes in large halls). All these senses can be served and used by architecture in real life. And in virtual life the five senses get reduced. In metaverse a building can be seen, sound effects can be implemented, and that is quite it.

Due to this for now still existing limitation of possibilities in metaverse, architecture should dare to go beyond where possible. It is limited to two senses, yes, but it can profit from the liberation of real-life boundaries. That is when architectural work in metaverse comes out of a discourse on needs and living options. That is when an architect becomes an artist who creates a new world not only by visual effects but by thinking what the expression shall be and by translating senses and sensitivity into creation. The understanding of a building may undergo changes in metaverse but that is acceptable, if not even wished for to happen. It will lead to redefinition of architecture and emphasize the need of thinking and creativity in metaverse. Creativity that leads to forms symbolic of human feeling. Such architecture is missing. And there lays the goal of creation beyond game design and sense deliberate structures that aim to

please tech affine players and do not touch base with the art in architecture which reflects the inhabitants needs and expressions.

Whether architecture is understood as art or utility, or art although being utile, does not really matter. By transcending into an overlapping space of virtual and physical reality the need for thoughtful creation is given. If art is said to be the creation of form symbolic of human feeling, then it is by this art that the relevant component of humanity can be implemented in the ternary *physical, human* and *digital* that the construction of metaverse blends.

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