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Non-Fungible Tokens – A New (Legal) Phenomenon in the Crypto Universe

Present Situation and Future Challenges

Nicht-fungible Token (NFTs) haben in letzter Zeit einen immensen Hype erfahren und wurden auch aus wirtschaftlicher Sicht immer wichtiger. Aus rechtlicher Perspektive werfen NFTs allerdings noch zahlreiche Fragen auf. Dieser Artikel beschäftigt sich mit den transaktionsbezogenen Herausforderungen (Eigentums- und Vertragsaspekte) von auf Kunstmärkten gehandelten NFTs und analysiert insbesondere die vielfältigen urheberrechtlichen Problemstellungen. Zudem wird der Frage nachgegangen, inwiefern finanzmarktrechtliche Regulierungen relevant sind.

Les jetons non fongibles (NFT, de l'anglais Non Fungible Tokens) ont récemment fait l'objet d'un grand engouement et présentent un attrait commercial toujours plus grand. D'un point de vue juridique, cependant, les NFT soulèvent encore de nombreuses questions. Cet article, qui se concentre sur les NFT négociés dans les marchés de l'art, aborde les défis transactionnels (propriété et questions contractuelles) et analyse en particulier les multiples questions que peut soulever le droit d'auteur dans ce domaine. Il évalue en outre la pertinence de la réglementation des marchés financiers.

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The english translation of the lead and summary is included on Swisslex and legalis only.

I. Introduction

The term «non-fungible token» (NFT) has become a buzzword during the last few months. As the name makes clear, such a token (i.e. a data package) is unique and cannot be reproduced. NFTs are novel products with an original value and are mirrored on the distributed ledger technology (DLT) infrastructure.[1]

NFTs are used in many markets and contexts; games and video clips have already become quite common. This article focuses on NFTs that introduce new business models in the field of art as understood in a broad sense (physical and digital art).

Normatively, NFTs concern several parts of the legal framework. For instance, with respect to the exploitation of crypto art, the provisions of property law, contract law and copyright law are of importance and will be discussed below. In addition, it must be examined whether and, if so, to what extent the issue of and the trade in NFTs in the crypto art world are subject to the application of financial market regulations.

1 For an overview of the distributed ledger technology (DLT) see D. RUTISHAUSER/R. KUBLI/R. H. WEBER, Grundlagen, in: R. H. WEBER/H. KUHN (eds.), Entwicklungen im Schweizer Blockchain-Recht, Basel 2021, 9 et seq. with further references; R. COGENS/C. LUCHSINGER GÄHWILER, Ein 360-Grad-Blick auf Token, Expert Focus 2018, 589, 590; V. KRAETZIG, NFTs als juristische Konstruktionsaufgabe, CR 2022, 477, 478 («verkapselte Daten»).

II. Concept, Functionality and Use Cases of NFTs

1. Concept of NFTs

As mentioned, NFTs represent a digital value in the form of a data package, but their structure may reflect different functionalities: Firstly, tokens can be native, meaning that they have their own legal existence without giving any claim against the issuer (such as cryptocurrencies), or non-native, meaning that they relate to an underlying asset (such as tokenized shares). Secondly, tokens can be fungible (such as cryptocurrencies) or non-fungible (such as NFTs).[2]

Two main types of NFTs in particular must be distinguished, namely firstly tokens representing an enforceable right, for example in respect of a physical work of art (such as a painting) or a digital work of art (such as a digital photo), and secondly tokens evidencing the originality of an art work.[3] The second type of NFT is more of factual than legal importance since a certificate of originality mainly has an evidentiary function and does not directly entail an inherent economic value, namely the right to dispose of the NFT and its underlying work of art. This article primarily analyses the legal environment of those NFTs that constitute a right.

The legally challenging NFTs representing an enforceable right can further be structured in two different forms:[4] (1) The token constitutes a completely digitized work of art (such as a digital photo) in a native form (example: «Everydays»). (2) The token represents a physical work of art, for example the original painting, in full or in part; by fractioning an expensive work of art into many NFTs, a broader number of investors are able to participate in the value of such a work of art; for example, Sygnum has issued 4000 tokens on Picasso's painting «Fillette au béret» (1964); apparently, the painter Beltracchi will proceed a similar way.

2. Functionality of NFTs

An NFT (or a token in general) is not a physical and tangible good. This fact concerns not only the token as such, but also the way the digital token is stored. NFTs are usually created on the basis of the Ethereum Blockchain and the 721 Standard (ERC-721); this template allows for unique identification and metadata coding, producing distinct and non-interchangeable tokens.[5]

The «non-fungible» quality enables the producer of the token to use it as a representation of the «ownership» of creative works, whether real-world assets or digital assets. Where the tokenized asset is of a high value, the NFT allows the value to be «sliced» and fractionalized for it to be co-financed and co-owned by a number of investors. An NFT can also be created to represent a kind of «digital twin» of a real-world asset. NFTs are particularly suitable for art markets since they make it possible to create value for collectors and transfer fair value to creators of such collectibles. The highest price paid for an NFT was the equivalent of USD 69 million achieved in Christies' auction of the digital art work «Everydays: The First 500 Days», produced by Beeple (Mark Winkelmann), in March 2021.[6]

For technical reasons, the on-chain storage of an NFT is not really feasibly, the data volume would be far too large, and this volume would even have to be replicated on all nodes of the Ethereum Blockchain. The so-called «gas fee» to be paid to the network for the storage of the token representing the said NFT «Everydays» was USD 57.5 million.[7] Therefore, only a link to the underlying metadata is usually registered on the blockchain; the metadata contain a further link to the token stored outside the blockchain in a so-called «Interplanetary File System».[8]

3. Use Cases of NFTs

Hereinafter, the main focus will be on NFTs in art markets. However, NFTs can also be used in many other contexts. Of practical importance are gaming artefacts; as a starting point, in 2017 the so-called CryptoKitties were introduced, on the lines of the known Tamagotchis (virtual cats). Further possibilities concern tweets, video sequences, collectible wines, cars or antiques, housing markets, etc.[9]

From a more theoretical perspective, academic research distinguishes three dominant use cases of NFTs which partly overlap:[10]

- *Consumption of the NFT*: The right to «consume» an NFT usually means that the conferred right is limited to the digital token itself and does not encompass the underlying art (or collectible); in art markets, creators often exclude the right to commercially exploit the underlying work.[11]
- *Commercial exploitation of the subject matter underlying the NFT*: The commercialization attempt is often driven by

2 The number of publications discussing NFT issues has already become quite high (at least in German); see for example the articles by M. Aref/L. Fábián/S. Weber, Digitale Originale dank NFTs?, GesKR 2021, 385, 387; M. J. Reymond, Mises au point sur la notion de Non Fungible Token, Jusletter of 31 May 2021, Nos. 9 et seq.; D. Wicki-Birchler, NFT und Metaverse: Ausgewählte Aspekte im Schweizer Recht, Jusletter IT of 31 May 2022, No. 6; T. Hoeren/W. Prinz, Das Kunstwerk im Zeitalter der technischen Reproduzierbarkeit – NFTs (Non-Fungible Tokens) in rechtlicher Hinsicht, CR 2021, 565/66; M. Kaulartz/A. Schmid, Rechtliche Aspekte sogenannter Non-Fungible Token, Compliance-Berater 2021, 298; R. Heine/F. Stang, Weiterverkauf digitaler Werke mittels Non-Fungible-Token aus urheberrechtlicher Sicht, MMR 2021, 755/56.

3 Aref/Fábián/Weber (Fn. 2), 387.

4 R. H. Weber, Non-Fungible Tokens als neue rechtliche Herausforderung, Bratschi Newsletter June 2022, accessible at ‹https://www.bratschi.ch/en/anwalt/rolf-h-weber.html›.

5 See Ethereum Request for Comments, ‹https://eips.ethereum.org/EIPS/eip-721›.

6 See ‹https://onlineonly.christies.com/s/beeple-first-5000-days/lots/2020›.

7 For further details see Aref/Fábián/Weber (Fn. 2), 388 with references.

8 Aref/Fábián/Weber (Fn. 2), 388/89; see also E. Politou/E. Alepis/C. Patsakis/F. Casino/M. Alazab, Delegated content erasure in IPFS, Future Generations Computer Systems 2020, 656, 658.

9 As early as 2012/13, first projects evidencing the uniqueness of a data package on the blockchain by way of so-called «colored coins» were launched.

10 See I. H.-Y. Chiu/J. G. Allen, Exploring the Assetization and Financialization of Non-fungible Tokens: Opportunities and Regulatory Implications, 37 Banking and Finance Law Review 2022, 401, 411.

11 See below section IV.4.

the aim to broaden the market for more investors since the tokenization of the underlying creative work and the fractionalization of the tokens lead to lower sale and trade prices (for example by issuing 4000 NFTs based on Picasso's painting «Fillette au béret»). In such a case, an NFT purchaser is (also) conferred limited rights given the essential «sharing» or non-rivalrous context of enjoyment.[12]

- *«Assetization» of the NFT in relation to access to finance*: An NFT can be designed in such a way that mainly achieves the objective of trading a financial instrument.

In practice, several projects have been launched and subsequently become known in Switzerland; for example mention can be made of the following recent projects:

- Sygnum Bank issued 4000 NFTs fractioned tokens representing Picasso's painting «Fillette au béret»; this allowed the number of investors in Picasso's art to be increased and a tradable «good» to be created; a claim on the physical painting is excluded.
- The NFT «#NF Grapevine» is a token on Heida wine (Valais) representing a single or a bundle of grapevines which exists not only digitally but also physically, and the token yields a bottle of wine made from the grapes of the Heida grapevine; each bottle is unique by means of an NFT which can be taped via integrated NFC tag.
- The «Avant-garde X» project, available on Foundation.app, produces NFTs that can be traded; the Avant-garde X 3D monument is being dropped as 9 tokens in 3 collections and will ultimately be developed into a full body real 3D figure that is able to move and feel and will play the role of a peace-making conqueror in an animation short movie in the Metaverse. The project roadmap reflects the true-life chapters of the monument character and is a collaboration between a lawyer-artist (Awin) in Zurich and a young 3D artist (Pooryar) in Iran.

In view of the fact that the business models for NFTs even on relatively small scales appear to be successful, it must be assumed that the «production» of and trade in NFTs will increase during the next few months and achieve a considerable turnover in art and other markets.

III. Sale and Transfer of NFTs

From a normative perspective, the sale and transfer of NFTs concern legal questions related to the holding of title (ownership issues) and to transactional elements (contractual issues), which are usually the key aspects of an NFT business model.

1. Ownership Issues

a) Property Law

Swiss property law is based on the principle that ownership relates to physical goods (except if the legislator allocates specific property functions to non-physical goods, such as in the case of intellectual property rights). Therefore, property law cannot directly regulate the holding of an NFT.[13] Nevertheless, it is partly argued in legal doctrine that property law should be applied by analogy or that a property-like interpretation would be appropriate.[14] However, according to the established majority opinion, such an approach firstly disregards the non-physical characteristics of data (i.e. a token but also the described storage structure for NFTs with two subsequent links); consequently, traditional property law is unavailable for direct or indirect (by analogy) application to NFTs.[15] Equally, the rules on the possession of real things *(«Datenbesitz»)* are not suitable to be invoked in the NFT context.[16]

However, the lack of a normative property order is usually not so important in practice since specific rules exist for the legal treatment of NFTs on the transactional level, particularly the exploitation chain:

- Transactional rules allow the transfer of NFTs in the form of so-called ledger-based securities (Art. 973f Code of Obligations – CO);[17]
- Digital assets can (also) be surrendered from a bankruptcy estate (Art. 242a Debt Enforcement and Bankruptcy Act).

From a theoretical point of view, two different rights positions are distinguished in the general securities law framework, namely (i) the right to the NFT and (ii) the right deriving from the NFT; both rights positions lead to the holding of specific enforceable claims:

On the one hand, the *right to the NFT* has impacts on different legal aspects of NFT transactions: (i) The holder of the NFT is entitled to transfer the token. (ii) The acquirer of the token may legally rely on the right of the token holder to dispose of the token, i.e., his/her good faith in the rights position is protected and can in principle not be contested by a third person (similarly to the case of the possession of a physical good). (iii) If the provider of the securities ledger goes bankrupt, the entitled holder of the NFT is in a position to withdraw the NFT from the bankruptcy estate, i.e. the NFT must be surrendered.

On the other hand, the main *right deriving from the NFT* mainly concerns the copyright protection to be analyzed below.

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12 On the commercialization aspects in more detail see Chiu/Allen (Fn. 10), 412/13.

13 Aref/Fábián/Weber (Fn. 2), 390 et seq.

14 M. Eckert, Digitale Daten als Wirtschaftsgut: Besitz und Eigentum an digitalen Daten, SJZ 2016, 265 et seq., 273 et seq.; B. Graham-Siegenthaler/A. Furrer, The Position of Blockchain Technology and Bitcoin in Swiss Law, Jusletter of 8 May 2017, Nos. 58 et seq.

15 For a general overview of the property/data discussion see R. H. Weber/F. Thouvenin, Dateneigentum und Datenzugangsrechte – Bausteine der Informationsgesellschaft?, ZSR 2018 I 43 et seq.; on the specific property/NFT discussion in particular see the recent article by Kraetzig (Fn. 1), 479/80.

16 The question has been raised by T. Hoeren in an article entitled «Datenbesitz statt Dateneigentum?» (MMR 2019, 5); see also Kraetzig (Fn. 1), 480/81.

17 See below section III.2.c).

b) Law of Ledger-based Securities

NFTs as tokenized values with functional similarities to securities cannot be qualified as traditional securities (such as shares, bonds, etc.) since the characteristics of a physical good are lacking due to their non-physical nature, i.e. property law principles are not appropriate.[18]

Furthermore, NFTs, being non-physical in principle, do not fulfil the requirements of uncertificated securities. The relevant Federal Intermediated Securities Act (Bucheffektengesetz, BEG) lays down the requirement of a central registry in which the securities must be listed.[19] Such a requirement cannot be fulfilled in the environment of a decentralized infrastructure such as blockchain.

But NFTs are so-called ledger-based securities. This new category of securities was introduced by the DLT Act of 25 September 2020,[20] in force with respect to ledger-based securities since 1 February 2021. This Act contains provisions about the design of ledger-based securities and the requirements which need to be met by a securities ledger so that transactions on the ledger can be properly executed.[21]

A securities ledger must fulfil the following conditions in order to provide for all functionalities needed to allow the transfer of NFTs:

- *Basis for the disposal of rights*: The ledger uses technological processes to give the creditors, but not the obligors, power of disposal of their rights.
- *Integrity*: The ledger's integrity is secured through adequate technical and organizational measures, such as joint management by several independent participants, to protect it from unauthorized modification.
- *Transparency obligations*: The contents of the rights, the functioning of the ledger and the registration agreement are recorded in the ledger or in linked accompanying data.
- *Inspection and verification rights*: Creditors can view relevant information and ledger entries, and check the integrity of the ledger contents relating to themselves without intervention by a third party.

The securities ledger has manifold effects on the contractual parties involved in the transfer of NFTs as well as on the public, which can be summarized as follows:

- *Represented rights*: The securities ledger contains the information about the entitled holders of tokens; the registered holder of an NFT able to transfer it by way of use of his/her private key is considered to be the entitled owner.[22]
- *Public notice*: The contents of the securities ledger are considered to be correct; the buyer of a token (an NFT) relying on the information contained in the securities ledger enjoys legal protection of his/her good faith, as in the case of a land register or a commercial register.
- *Rights of intervention*: Third parties do not have a right to intervene in the registration records of the securities ledger, apart from a very few exceptions.
- *Stability of transactions*: The described technical design of the securities ledger supports the stable execution of NFT transactions.

The existence of ledger-based securities is particularly important for the assessment of the transactional (i.e. contractual) issues of the NFT business.

2. Contractual Issues

a) Smart Contracts

NFT business models are founded on contracts, namely – due to the execution on the blockchain – on smart contracts. Legally a smart contract describes a technology which (with legal effects) allows the exchange of digitally referenced goods and services based on computable contract terms.[23] In fact, a smart contract is neither a contract nor smart. In its pure form, it is embedded in an irreversible code reflecting a consensual arrangement between the parties for an automated, independent commercial result by way of creating computable contract terms.[24]

The sale of an NFT or the auction of an NFT is a bilateral transaction. But on the blockchain, the whole technological design is vested in the consensus mechanism of all participating individuals and enterprises. Therefore, it is in part argued that a network of contracts would constitute the legal foundation of the token industry; however such an approach is not feasible since a central counterparty is missing on the blockchain.[25]

b) Conclusion of Contract

Most normative provisions contained in contract law are capable of being applied to smart contracts. The problem of the (individual) «meeting of minds» as a precondition for the conclusion of a contract exists, but the general assumption that the contracting parties concerned express

18 See above section III.1.a).

19 H. Kuhn, Digitale Aktiven im schweizerischen Privatrecht, in: R.H. Weber/H. Kuhn (eds.), Entwicklungen im Schweizer Blockchain-Recht, Basel 2021, 51, 63.

20 Bundesgesetz zur Anpassung des Bundesrechts an Entwicklungen der Technik verteilter elektronischer Register (DLT Act), AS 2021, 33 et seq.

21 The following list is based on the detailed description in Kuhn (Fn. 19), 72 et seq.; see also D. Flühmann/S. Vettiger, Shares in Form of Ledger-Based Securities, GesKR 2022, 102, 103.

22 See also Kuhn (Fn. 19), 89 et seq. (referring to «Verknüpfung von Recht und Registereintrag»).

23 R. H. Weber, Smart Contracts: Vertrags- und verfügungsrechtlicher Regelungsbedarf?, sic! 2018, 291/92.

24 R. H. Weber, Smart Contracts and What the Blockchain Has Got to Do With It, in: M. DeStefano/G. Dobrauz (eds.), New Suits, Appetite for Disruption in the Legal World, Bern 2019, 355, 359; the irreversibility has the disadvantage that errors in the smart contract cannot be corrected (see E. Gyr, Blockchain und Smart Contracts: Die vertraglichen Implikationen einer neuen Technologie, Diss. Basel 2019, Nos. 249 et seq.).

25 See Bericht des Bundesrates über die rechtlichen Grundlagen für Distributed Ledger-Technologie und Blockchain in der Schweiz vom 14. Dezember 2018, 54, ‹https://www.newsd.admin.ch/newsd/message/attachments/55150.pdf›; B.V. Enz, Kryptowährungen im Lichte von Geldrecht und Konkursaussonderung, Diss. Zurich 2019, 179; differently H.C. von der Crone/F. Kessler/L. Angstmann, Token in der Blockchain, SJZ 2018, 337, 340/41.

their willingness to be bound by a smart contract when agreeing to the technical setting is applicable.[26] This assessment is not jeopardized by the fact that the contracting parties technically often do not fully understand the programming language (an object-oriented syntax) since the criterion of «understandable language» may be interpreted broadly.[27] Furthermore, reference can also be made to the concept of the «parties' conduct» consisting in the preparedness to execute a transaction based on a smart contract.[28]

Nevertheless, some (already well diagnosed) legal challenges in respect of the formation of the contract should not be overlooked, for example:[29]

- The requirement that some consumer contracts must be concluded in writing is impracticable since the procedures for electronic signatures do not easily align with the needs of the parties to smart contracts.
- The principle of legal capacity for entering into valid contractual arrangements requires the introduction of precautionary measures in order to prevent minors assuming burdensome obligations.
- Basic legal principles are compliance with public order or morality, as well as compliance with fundamental personality rights. Again, protective measures should be programmed to limit the risk of undesirable results.

Notwithstanding the said legal challenges, smart contracts are already quite frequently used as legal instruments (for example in the insurance business) and insurmountable obstacles have not occurred.

c) Contractual Performance

A smart contract clearly complies with the principle «pacta sunt servanda»; the programming code strengthens the stability of the legal rules (and prevents a so-called «efficient breach of contract»).[30] The «production» of NFTs constitutes a work contract (Art. 363 CO); according to judicial practice and legal doctrine, works do not need to be physical, i.e. tokens as data packages are also capable of being qualified as a «work».[31] The transfer of existing NFTs has similarities to sale and purchase agreements (Art. 184 CO), although the transaction is based on the said specific provisions governing ledger-based securities.[32]

The typical types of contractual non-performance scenarios such as impossibility, non-performance and delayed delivery do not appear to play a relevant practical role in view of the automated execution of a smart contract as coded in the computer routine.[33] In the event of technology or program failures, the specific (but restrictive) provisions related to ledger-based securities[34] or, alternatively, the legal concepts already developed seem to be appropriate as guiding directives (for example the spheres-of-risks concept or the cheapest cost avoider concept); furthermore, basic principles of law such as the due diligence obligation in activities in performance of a contract can be applied appropriately.[35]

d) Special Issues

An important practical problem concerns the use of Standard Terms and Conditions (STC) as part of the transactional arrangements. If the seller of an NFT introduces STC (which can be appropriate in the case of a complicated transfer regime and/or a sophisticated copyright framework), it is often unlikely that the buyer is in a position to read and understand the relevant provisions as required by consumer protection legislation.[36] But in contrast to the theoretical considerations, the importance of this challenge does not seem to have been very substantial in reality.[37]

IV. Copyright Framework

1. Preliminary Observations

Amongst the intellectual property rights, copyright law plays the most important role in crypto art markets; but depending on the given situation, reference to trademark law and particularly to unfair competition law could also be relevant.[38] From a technological perspective, NFTs have similarities to computer programs according to Art. 2 para. 3 Copyright Act («Computer programs are also works»); materially, NFTs mostly reflect copyright-protected contents. Since the exploitation scheme for NFTs, particularly in the field of art, is of utmost importance as shown below, the legal challenges need to be discussed in more detail.[39]

In principle, the blockchain infrastructure is able to improve efficiency and reduce costs. This effect particularly plays a role in connection with the design of the copyright architecture. The exploitation of copyright protected works can determine the scope of the functionalities, such as access, reproduction or even remix of a digital copy. Rights holders («owners») are in a position to establish direct relationships with the public.[40] By applying smart contracts for implementing the terms and conditions that enable the users to have access to the protected works and (in parallel)

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26 Weber (Fn. 24), 364; Wicki-Birchler (Fn. 2), No. 34.
27 A. Furrer, Die Einbettung von Smart Contracts in das schweizerische Privatrecht, Anwaltsrevue 2018, 103, 107.
28 Unidroit Principles of International Commercial Contracts (2016), Art. 2.1.1, Commentary 3 («conduct of the parties»); Weber (Fn. 23), 294.
29 Weber (Fn. 24), 365/66.
30 R. H. Weber, Leistungsstörungen und Rechtsdurchsetzung bei Smart Contracts, Jusletter of 4 December 2017, No. 18.
31 BGE 109 II 37; BSK OR I-Zindel/Schott, 7th edn. 2020, before Art. 363–379 No. 3.
32 See above section III.1.b).
33 Weber (Fn. 24), 367.
34 See above section III.1.b).
35 For more details see Weber (Fn. 23), 297.
36 For the elements of an exploitation scheme see below section IV.4.
37 Weber (Fn. 23), 294.
38 See below section IV.5.
39 See also Aref/Fábián/Weber (Fn. 2), 396 et seq.; Hoeren/Prinz (Fn. 2), 569, 571; Heine/Stang (Fn. 2), 757 et seq.; Kraetzig (Fn. 1), 481/82.
40 R. H. Weber, «Rose is a rose is a rose is a rose» – what about code and law, 34 Computer Law & Security Review 2018, 701, 705.

by using digital currencies (cryptocurrencies) to make it possible to execute micro-payments to the relevant right holder, a new copyright architecture can be realized.[41] A combination of smart contracts with a DLT-based registry of NFTs would lay the technical ground for the automatic licensing of protected works and thus facilitate the management of copyright.[42]

2. Minting of NFTs

The technical «production» of an NFT is called «minting»; from a copyright law perspective, two rather complicated legal issues are involved, namely:

- *Right to produce copies of the work*: As mentioned, technically an NFT contains a link to the metadata that are stored outside the blockchain in an Interplanetary File System. The storage of the NFT fulfils the conditions of the production of a copy of the work (*«Vervielfältigung»*, Art. 10 para. 2 lit. a Copyright Act [CopA]).[43] Such a «replication» is only permissible if the holder of the NFT agrees to such process, which in practice is mostly the case as part of the contractual arrangement, particularly the foreseen exploitation scheme.
- *Right of making the minted token accessible*: Since often several persons have access to the NFT, the actual holder must agree to this process, i.e. access must be made available directly or through any kind of medium in such a way that entitled persons may enjoy the access («Zugänglichmachen», Art. 10 para. 2 lit. c CopA);[44] again, such consent is usually available in real life since the contractual arrangements provide for access rules.

As mentioned, many NFTs are not stored directly on the blockchain but in the form of metadata in the Interplanetary File System. The relevant connection is established by way of a link. Whether a link is of copyright relevance is intensively discussed in legal doctrine.[45] The prevailing opinion does not qualify the putting of a link as a «work» as defined by the Copyright Act.[46] Under specific circumstances, the title of the data package or a connected description of the digital art represented by the NFT could separately enjoy copyright protection, if a sufficient degree of individuality is achieved (for example original combination of words), mainly as a literary work (Art. 2 para 2 lit. a CopA).[47]

Generally, the copyright requirements described can be dealt with in the contractual framework, thoroughly drafted by a lawyer. But even if smart contracts are a stable basis for transactions, experience has shown that for example title issues can cause litigation; several cases are pending in the United States, for example a complaint against Kevin McCoy and Sotheby regarding the sale of the «Quantum» NFT in 2021.[48]

3. Transfer of NFTs

A proper legal structure of the transfer arrangements related to a copyright-protected work of art makes it necessary to deal with several relevant legal issues encompassing the concrete details of the transactions as well as the general terms and conditions related to the exploitation of an NFT. In particular, the agreement between the parties involved should state how the holding of an NFT relates to the ownership of the underlying physical work of art (for example a painting).[49] Furthermore, it is important to clarify whether the creator of the art has the right to produce only one NFT or several NFTs for the copyright-protected work.

As in ordinary sales transactions, the key provisions of the agreement regularly concern the transfer of an NFT as such and the corresponding payment for this NFT. As mentioned, sale and purchase occur by change of the relevant NFT registration on the securities ledger.[50] There is a special feature in the case of NFTs insofar as the token registered on the securities ledger is not the tokenized work of art but «only» a link to the metadata stored elsewhere; therefore, the legal position is different from the situation of the sale and purchase of a physical work of art.[51]

In principle, the legal framework as now designed by the DLT Act and in particular by the new provisions on ledger-based securities provides for a reasonable normative framework. The details can be drawn from Art. 973e and 973f CO as already described.[52] A major normative issue in connection with the transfer of NFTs concerns the overall exploitation scheme, which will be addressed separately.[53]

Risks in connection with the transfer of NFTs on the DLT infrastructure cannot be overlooked, for example mining attacks, hacking, security gaps or also loss of the private key.[54] Therefore, in order to avoid doubts, the contractual arrangements should contain risk allocation rules. In practice, sellers of NFTs try to limit responsibility for communications failures, disruptions, errors, distortions or de-

41 Weber (Fn. 40), 705.
42 B. Bodó/D. Gervais/J. P. Quintais, Blockchain and smart contracts: the missing link in copyright licensing? 26 International Journal of Law & Information Technology 2018, 311, 322 and 328.
43 R. Hilty, Urheberrecht, 2nd edn. Ben 2020, Nos. 301 et seq.; OFK/URG-Rehbinder/Haas/Uhlig, 4th edn. Zürich 2022, Art. 10 No. 9; Aref/Fábián/Weber (Fn. 2), 385/86.
44 Hilty (Fn. 44), Nos. 354 et seqq.; Aref/Fábián/Weber (Fn. 2), 386.
45 R. M. Hilty/O. Schmid/M. Weber, Urheberrechtliche Beurteilung von «Embedding», sic! 2016, 237, 239 et seq.
46 Hilty/Schmid/Weber (Fn. 45), 239 with further references.
47 Aref/Fábián/Weber (Fn. 2), 397.
48 See the lawsuit before the US District Court for the Southern District of New York, ‹https://ledgerinsights.com/wp-content/uploads/2022/02/Quantum-nft-sothebys.pdf›.
49 In practice, the ownership of the underlying physical work of art is usually reserved to the original creator; this is particularly the case if a well-known work of art is tokenized in a fractioned way in order to attract a broader public.
50 See above section III.1.b); see also Aref/Fábián/Weber (Fn. 2), 398 and Reymond (Fn. 2), No. 17.
51 The purchaser of an NFT does not become the «owner» of a copy of the work with the transfer of the relevant wallet in the sense of Art. 10 para. 2 lit. a CopA, which means that the exhaustion principle applicable to physical works of art (Art. 12 paras. 1 and 2 CopA) does not apply (Aref/Fábián/Weber [Fn. 2], 398).
52 See above section III.1.b).
53 See below section IV.4.
54 For further details see Hoeren/Prinz (Fn. 2), 571/72.

lays; further liability restrictions usually concern the loss of the private key and the volatility of the markets.

As far as the securities ledger in particular is concerned, the new legal provisions on ledger-based securities contain the obligation to implement precautionary measures in order to avoid the occurrence of risks; as explained, the main guidelines concerning the stability and resilience of the securities ledger are contained in Art. 973d CO;[55] however, the liability framework of Art. 973i CO allows the provider of the securities ledger to submit evidence that the failure was caused outside its sphere of control.

4. Exploitation Scheme

As far as the exploitation scheme in particular is concerned, the following topics should be reflected in the contractual arrangement governing it, and be thoroughly drafted by a lawyer:[56]

- *Licensing system*: The parties should agree on whether the purchaser has a right to further dispose of the NFT; such a right is usually in the interest of the buyer of the NFT but it cannot be taken for granted, except if a so-called implied license for certain forms of use of the rights is to be assumed.[57] The provision could read as follows: The seller of the NFT grants to the buyer an exclusive, world-wide, royalty-free license to use, copy and display the acquired NFT. Nevertheless, even if in principle a right of disposal is foreseen, it is possible to introduce certain restrictions (to be programmed into the NFT); for example, the seller of the NFT may wish to prohibit specific further disposals or prevent the sale to citizens of specific countries.[58]
- *Exploitation chain*: The design of the licensing system should also provide for the details of the exploitation chain; the use of the NFT can be limited to personal purposes or be «opened» to commercialization (usually with the consequence of a higher price or an additional license fee). Further provisions can address the right to organize a marketplace for acquired NFTs or the right to create derivative works based on the copyright-protected art.
- *Financial participation*: As mentioned, the blockchain infrastructure enables the parties to program the NFT in a way that the original rights holder, namely the artist, will receive a financial participation in each subsequent sale of the NFT, i.e. the infrastructure allows the fractioning of the proceeds. Since a right to financially participate in the resale of the copyright-protected work is not foreseen in Swiss law, but for example in German law,[59] it is important in practice to include a specific clause in the contractual arrangement if the creator is to have a right to further proceeds.
- *Right to produce derivative works*: Since the creator (original rights holder) of the copyright-protected work often keeps his/her user rights, a potential right to produce derivative works must be contractually agreed. It can even be laid down that the seller of the NFT (creator) allows the buyer to destroy the art work.[60]
- *Exhaustion principle*: In connection with the exploitation of NFTs, the exhaustion principle is usually not relevant since the transfer of an NFT does not qualify as the production of a copy of the work (a «replication»); nor is an analogous application of the exhaustion principle justified. There would only be an exception if an NFT is linked to the copyright-protected work in a way that leads to a durable storage on a specific data medium which is transferred in the event of its further disposal.[61] In such a case, a contractual provision can clarify the legal situation.

As shown, the list of contractual issues related to copyright topics is very long; consequently, a careful and diligent structuring of the contractual arrangement with the support of an experienced lawyer appears to be essential if future problems are to be avoided or at least mitigated. Some contractual «models» are available in the community concerned but further refinement is necessary; the fact that the «Standard Terms and Conditions» used by Christies try to exclude any liability for the proper technical execution of an NFT transaction and to transfer all risks to the buyer of an NFT is evidence that there are relevant legal uncertainties.[62]

5. Challenges in Adjacent Legal Areas

NFTs are mostly not used as marketing tools, nor are they usually found in a trademark register; for this reason, trademark law does not (yet) play a primary role in the NFT context. However, the situation may change over time with the advent of the Metaverse; if people, with the help of avatars, shop in virtual stores, view art galleries and even buy paintings in the Metaverse, then the unique digital products can also be sold and purchased in the form of NFTs. Nevertheless, in contradiction to the outcome of an expert meeting, the Swiss IPI holds that NFTs are to be classified under the Nice Classification neither as goods in class 9 nor as services in class 35.[63]

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55 See Kuhn (Fn. 19), 79.

56 Initial models for contractual provisions have been developed in practice.

57 Aref/Fábián/Weber (Fn. 2), 398; more restrictive on implied licenses, Hoeren/Prinz (Fn. 2), 570.

58 See also Hoeren/Prinz (Fn. 2), 570; Heine/Stang (Fn. 2), 758/59; Aref/Fábián/Weber (Fn. 2), 398.

59 See Heine/Stang (Fn. 2), 759/60.

60 The offeror of an NFT representing a physical copyright-protected drawing of the late artist Jean-Michel Basquiat has allowed the buyer of the NFT to destroy the drawing afterwards: «The highest bidder will receive an encrypted digitized token of Basquiat's original work [...] conveyed on the Ethereum blockchain, along with all related IP and copyright in perpetuity. [...] At the winner's discretion, the original artwork will be deconstructed, leaving the NFT as the only remaining form of Basquiat's work to exist» (see Aref/Fábián/Weber [Fn. 2], 398 footnote 149).

61 See above section IV.2; Heine/Stang (Fn. 2), 758/59.

62 See Christie's conditions of sale, NFT Online-Only Sales: Auctions, Para.E. 4.h), ‹https://www.christies.com/buying-services/buying-guide/conditions-of-sale›.

63 Swiss IPI, Newsletter IPI, 28 June 2022, No. 01; in contrast, in a recent press release the European Intellectual Property Office has expressed the opinion that «downloadable digital files authenticated by NFTs» are to be classified in class 9 and that an additional wording should be included in the draft Guidelines 2023.

Furthermore, the relevance of the Unfair Competition Act (UCA) should not be underestimated. Even if a reproduction or a copy of a work of art does not violate the Copyright Act, non-compliance with the UCA is possible. Taking advantage of the existing standing of a good in the market without an investment of one's own may constitute an unlawful exploitation of the marketable results of the work of another person without corresponding efforts of one's own (Art. 5 lit. c UCA); furthermore, misleading or imitative offers or advertisements constitute an infringement of Art. 3 para. 1 lit. b or lit. d UCA. In particular, depending on the circumstances, an unlawful exploitation of third-party original efforts could become relevant if it is technically possible to «divert» the NFT from the entitled owner.[64] Insofar, unfair competition law has the function of a supplementary discipline.

V. Financial Market Regulations

The potential application of financial market regulations could cause challenges for crypto art projects, except where an NFT «only» evidences the originality of an art work, i.e. is not an enforceable right. In practice, efforts are taken in order to avoid the issue of NFTs becoming subject to these regulations and many issuers have their non-applicability confirmed by way of a legal opinion.

1. Token Classification

On 16 February 2018, FINMA released the «Guidelines for enquiries regarding the regulatory framework for initial coin offerings (ICOs)». These Guidelines differentiate between three categories of tokens, namely (i) payment tokens, (ii) utility tokens and (iii) asset tokens;[65] furthermore, hybrid tokens can also exist that encompass different functionalities. The ICO Guidelines theoretically constitute soft law, although FINMA strictly enforces the provisions, and hence they have become relatively «hard» in practice; in addition, the Federal Council has adopted the FINMA token classification in its 2018 DLT Report.[66] FINMA qualifies the tokens in view of their function, not their formal designation («substance over form»).

(i) As the name says, *payment tokens* are used to make payments (often called cryptocurrencies). NFTs are not intended to be used as means of payment for acquiring goods or services or as means of money or value transfer; accordingly, they cannot be qualified as payment tokens according to the FINMA Guidelines. Consequently, if at all, an NFT may «only» have similarities with utility tokens or with asset tokens.

(ii) *Utility tokens* grant access to a digital application or service on a DLT infrastructure; the token holder has a contractual claim against the offeror of the application or service, which is not the case for NFTs representing a digital copy of an art work. If, in a rare situation, an NFT gives access to the allocation mechanism of a smart contract, the qualification as utility token could theoretically become possible; however, utility tokens are not standardized for mass trading and do not qualify as securitized instruments.[67]

(iii) The FINMA Guidelines qualify those data packages (or «*verkapselte Daten*») which represent underlying values (such as participations in real physical values or earnings streams, particularly debt, derivative or equity claims against the issuer) as *asset tokens*. In the case of NFTs such a claim is usually not reflected in the data package even if the token is acquired for investment purposes;[68] furthermore, an NFT is not redeemable, its «owner» can only exit by selling the NFT to another investor. Only in very special circumstances may an NFT give the holder a relative right enforceable against the issuer, thereby making it an asset token. However, the FINMA Guidelines also state that an asset token may not per se be qualified as a security; FINMA only treats asset tokens as securities if they are standardized and suitable for mass trading[69] as described below.

2. Securities Regulations

NFTs represent transferable rights in the form of ledger-based or registered securities. However, financial market regulations only apply if the specifically defined (and expanded) term «security» is fulfilled: According to these regulations a security must be fungible[70] and suitable for mass trading (Art. 3 lit. b Financial Services Act [FinSA] and Art. 2 lit. b Financial Market Infrastructures and Market Conduct in Securities and Derivatives Trading Act [FMIA]).[71] The new DLT Act also introduced the notion of the «DLT security», which is not necessarily a ledger-based security but stored by means of a DLT (Art. 2 lit. b^{bis} FMIA).

As the term NFT expresses, the token is not fungible; therefore, at least from a terminological perspective NFTs do not in principle fulfil the said requirements for qualification as a security (fungible and suitable for mass trading). In this sense, FINMA qualified the so-called WISC Tokens of WISeCoin AG not only in a formal but also in a functional assessment as utility tokens, not as asset tokens.[72] Furthermore, FINMA already pointed out in its ICO Guide-

64 For the details of un unlawful exploitation according to Art. 5 lit. c UCA so DIKE UWG-Weber/Chrobak, Basel 2018, Art. 5 lit. c, Nos. 13 et seq.

65 FINMA, Guidelines for Enquiries regarding the Regulatory Framework for Initial Coin Offerings (ICOs), 16 February 2018, 2/3.

66 Bericht des Bundesrates über die rechtlichen Grundlagen für Distributed Ledger-Technologie und Blockchain in der Schweiz of 14 December 2018 (DLT-Report), 87 et seqq.

67 See below section V.2.

68 In rare cases, NFTs are acquired for investment purposes (see Aref/Fábián/Weber [Fn. 2], 395).

69 FINMA, ICO-Guidelines (Fn. 63), 5.

70 On the term «fungible» see St. Ender, Effekten mit einem rechtlichen und einem wirtschaftlichen Emittenten, Diss. Zürich 2016, Nos. 73 et seqq.

71 Y. Mauchle, Tokens als Effekten, GesKR 2022, 183, 187.

72 See Position Paper of FINMA of 9 January 2019 addressed to WISeCoin AG, ‹https://docs.wisekey.com/seit/justdowload.html?id=112›.

lines that payment tokens and utility tokens are not to be qualified as securities.[73] It is only if an NFT represents fungible rights in a particular way (a rare situation) that the qualification as security would be justified.[74] The same assessment applies in respect of the DLT security; NFTs are mostly not tradeable on a DLT trading system.

The term «derivative» is defined in Art. 2 para. 2 FinSA as being where the price determination is made dependent on underlying assets or referenced values; in practice, NFTs are usually not derived from underlying assets and are therefore not subject to derivative financial market regulations.[75]

In a nutshell, the risk that the issuer of NFTs would have to comply with financial market regulations appears to be relatively remote; nevertheless, a case-by-case analysis should be undertaken in order to minimize legal uncertainties.

3. Anti-Money Laundering Regulations

Financial intermediaries (for example providers of payment services) are considered to be persons who professionally accept or hold third-party assets or help to invest or transfer them (Art. 2 para. 3 lit. b Anti-Money Laundering Act [AMLA]); in such a case, the AMLA is applicable. Furthermore, a money exchange is qualified as a commercial activity subject to the AMLA, and the professional trading of crypto currencies against FIAT currencies (and between different crypto currencies) constitutes a money exchange.[76] The issue of payment tokens is considered an activity subject to the AMLA if the tokens are technically transferable. But the mere payment for services or goods as well as the provision of corresponding services against payment are outside the AMLA's scope of application.[77]

As already mentioned, an NFT cannot be used to purchase any goods or services; in addition, the issuer of NFTs usually does not have the intention to produce a payment instrument. Therefore, NFTs are not payment tokens and consequently not subject to the AMLA. The same assessment applies in respect of utility tokens, which as a rule do not have a payment function, i.e. the AMLA is not applicable.

If an NFT represents a digital copy of a work of art that can be visualized, no realization of financial purposes is envisaged even if the NFT has an asset character and resembles an asset token, i.e. the AMLA regulations do not need to be observed. It is only in very special circumstances, if an NFT gives the holder a relative right against the issuer and if the NFT is properly standardized for mass trading on an exchange, that the application of the AMLA should be carefully considered.

VI. Outlook

Notwithstanding the ever-present uncertainties of crystal-ball gazing, the forecast may be ventured that NFTs appear to be a promising new business model and that practices with NFTs have already changed and will continue to change the commercialization of art (and other objects/services) as well as the investment possibilities. In particular, NFTs make it feasible to include a broader part of civil society in the art environment in manifold forms. The scope of use of NFTs is equally becoming broader, extending to the gaming and entertainment industry. As a consequence, further legal provisions could become applicable, for example the requirements of the Swiss Gaming Act.

However, a basic challenge for any attempt to design an appropriate legal framework for NFTs consists in the fact that the objectives of producers of NFTs are partly unclear: Does the intention prevail that an enforceable right and a better transferability of a protected work of art by an improved licensing system should be achieved or that «only» the originality of the tokenized value should be secured? Depending on the specific intention, different normative rules are to be applied or, alternatively, different contractual arrangements need to be put in place.

As far as the legal framework is concerned, it can be foreseen that the copyright architecture will have to be redesigned, namely from a scarcity- and exclusivity-oriented monetization model to a controlled access-oriented system. The new blockchain technology offers the rights holders the possibility to gain and execute more options for the commercialization of their copyright-protected works. Furthermore, increased clarity in respect of the employment of smart contracts would be desirable. Only if there is legal stability regarding the applicable rules will the community engage in new business models. As a special issue, the threats of financial market regulations are lurking behind the door and need to be carefully assessed.

NFTs are a new phenomenon. Therefore, a good reaction of the involved market participants from different disciplines would consist in an attempt to develop a certain standardization of the applicable rules by way of implementing guidelines that could make the handling of transactions easier and increase legal certainty.

73 FINMA, ICO-Guidelines (Fn. 63), 4/5.
74 See also Aref/Fábián/Weber (Fn. 2), 395.
75 Aref/Fábián/Weber (Fn. 2), 395/6; Mauchle (Fn. 71), 186.
76 See Art. 5 para. 1 lit. a AML-Ordinance.
77 See also C. Stengel/L. Bianchi, Geldwäscherei und Terrorismusfinanzierung, in: R. H. Weber/H. Kuhn (eds.), Entwicklungen im Schweizer Blockchain-Recht, Basel 2021, 225, 235/36; for a recent overview of the AML challenges see F. Schemmel, Non-Fungible Token (NFT) und Geldwäsche – eine aktuelle Einordnung, Compliance-Berater 8/2022, 286 et seqq.

Zusammenfassung

Nicht-fungible Token (NFTs), also einzigartige Datenpakete, die einen bestimmten (digitalen) Wert repräsentieren, haben in letzter Zeit als neues Instrument, das die Kommerzialisierung urheberrechtlich geschützter Kunst ermöglicht, viel Aufmerksamkeit erregt. Kommt NFTs nicht nur die Funktion eines Echtheitszertifikats zu, sondern verkörpern sie selber Rechte, ist es möglich, durch die Ausgabe entsprechender Token innovative Geschäftsmodelle zu entwickeln und sie zu kommerzialisieren. Dadurch können NFTs zu einem Investitionsobjekt werden und ermöglichen im Falle ihrer fraktionierten Ausgabe auch die Markteinbeziehung eines breiteren Teils der Bevölkerung. Natürlich bergen NFTs auch neue rechtliche Herausforderungen. Allerdings können die Eigentumsfragen mittels der Kategorie der Registerwertrechte nach dem DLT-Gesetz von 2020 gelöst werden; die Nichtanwendbarkeit des traditionellen Eigentumsrechts stellt damit keinen relevanten Nachteil dar. Die transaktionellen Aspekte betreffen die sogenannten Smart Contracts, wobei diese digitale Form der Vereinbarung es ermöglicht, auf die bestehenden Bestimmungen des Vertragsrechts zurückzugreifen. Die wenigen bestehenden charakteristischen Schwierigkeiten konnten bisher überwunden werden bzw. erfordern lediglich eine technologieorientierte Auslegung des gegebenen normativen Rahmens. Auch das Urheberrecht sieht sich mit neuen Herausforderungen konfrontiert, sowohl was die Schaffung (sogenanntes Minting) als auch die Übertragung von NFTs betrifft. Die Blockchain-Infrastruktur ist grundsätzlich in der Lage, die Effizienz zu steigern und die Kosten zu senken; die Verwertung urheberrechtlich geschützter Werke kann in einem vertraglichen Rahmen operationalisiert werden, der den Zugang, die Übertragung, die Vervielfältigung oder sogar die Weiterverarbeitung einer digitalen Kopie regelt, d.h. die Implementierung eines Lizenzierungssystems und einer entsprechenden Verwertungskette (inkl. einer finanziellen Beteiligung des Urhebers) ist möglich. Ein weiteres Problem stellt grundsätzlich die Anwendung der Finanzmarktvorschriften dar. NFTs unterliegen nicht den Wertpapiergesetzen oder den Bestimmungen zur Bekämpfung der Geldwäscherei; zur Minimierung rechtlicher Unsicherheiten erscheint eine Einzelfallanalyse dennoch lohnenswert.

Résumé

Les jetons non fongibles (NFT), qui sont des ensembles de données uniques représentant une certaine valeur (numérique), ont récemment suscité un grand intérêt en tant que nouvel instrument permettant la commercialisation d'œuvres d'art protégées par le droit d'auteur. Si les NFT ne jouent pas seulement le rôle de certificat d'originalité, mais incarnent eux-mêmes des droits, il est possible de concevoir des modèles d'affaires innovants en émettant des jetons et en les rendant commercialisables. Ainsi, les NFT peuvent devenir un moyen d'investissement et permettre l'inclusion d'une plus grande part de la population sur le marché en cas d'émission fractionnée. Bien entendu, l'existence des NFT entraîne également de nouveaux défis juridiques. Les questions de propriété peuvent toutefois être résolues au moyen de la catégorie des droits-valeurs enregistrés en vertu de la Loi fédérale sur l'adaptation du droit fédéral aux développements de la technologie des registres électroniques distribués (TRD) de 2020 ; la non-applicabilité du droit traditionnel de la propriété ne constitue donc pas un inconvénient pertinent. Les questions transactionnelles concernent les contrats dits «intelligents» *(smart contracts)*, mais cette forme numérique d'accord permet de s'appuyer sur les dispositions existantes du droit des contrats. Les quelques difficultés spécifiques ont pu être surmontées jusqu'à présent, ou nécessitent uniquement une interprétation du cadre normatif donné qui prenne en compte la technologie. Le droit d'auteur est lui aussi confronté à de nouveaux défis, aussi bien en ce qui concerne l'émission *(minting)* que le transfert des NFT. L'infrastructure blockchain est fondamentalement en mesure d'en améliorer l'efficacité et d'en réduire les coûts. L'exploitation d'œuvres protégées par le droit d'auteur peut être réalisée dans un cadre contractuel qui réglemente l'accès, le transfert, la reproduction ou même le traitement ultérieur d'une copie numérique, c'est-à-dire qu'il est possible de mettre en œuvre un système de licences et une chaîne d'exploitation correspondante (incluant une participation financière de l'auteur). Un problème supplémentaire concerne l'application de la réglementation des marchés financiers. De manière générale, les NFT ne sont pas soumis aux lois sur les valeurs mobilières ou aux dispositions visant à lutter contre le blanchiment d'argent ; cependant, une analyse au cas par cas semble indiquée afin de minimiser les incertitudes juridiques.