

Delphine Yerly / Charlotte Boulay

Fintech, Bitcoins, Blockchains, Decentralized autonomous organizations (DAOs): the future is bright, the future is decentralized

The world is going through a real decentralizing, disruptive revolution not only of economic activities, but also of social interrelations and political aspects of life, of which most of us are not aware. The goal of the seminar is to define the outlines of this revolution and to understand the opportunities and challenges the technologies relating to cryptocurrencies, blockchains, DAOs and generally Fintech represent for the economic, social and political actors.

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1. Intervention by Vincent Mignon (40 min) «Blockchains, Bitcoins and Ethers for Idiots»¹

[Rz 1] Maître VINCENT MIGNON introduced the theme of the conference, focusing on *blockchain* technology, cryptocurrencies – bitcoins and Ethers – and decentralized autonomous organisations (DAOs hereinafter).

[Rz 2] In the first part of his presentation, VINCENT MIGNON elaborates on the bitcoin² network, because bitcoin can be understood as the starting point of all the reflexions around cryptocurrencies and *blockchains*. Even if there is no single definition of what bitcoin is, VINCENT MIGNON states that Bitcoin has a dual meaning. It is both a digital asset and a payment system. The operating principle of the bitcoin network is explained and notably how bitcoin works. A particular accent is put on the following notions: *blockchain*, a shared public transaction ledger, *wallet*, an electronic purse generating a bitcoin public address and a set of private and public keys required for transaction encryption, *miners*, bitcoin mining serves to both add transactions to the *blockchain* and to release new bitcoin. VINCENT MIGNON believes that the bitcoin currency offers several advantages: there is no recourse to trusted third-parties, the transfers – carried out worldwide – are almost instantaneous, of little cost, and are unlimited in their amounts. On the other hand, he stresses that the bitcoin is also characterised by its volatility and the irreversibility of transactions. In addition, the user must be more vigilant, especially with regard to the storage of his private key.

[Rz 3] VINCENT MIGNON then goes on to talk about a particular public *blockchain*: *Ethereum*. This decentralized software platform allows computer programs (decentralized applications, smart contracts and decentralized autonomous organizations) to run. The execution of these computer programs, recorded on the *Ethereum's blockchain*, is autonomous, automatic and transparent. *Ethereum* is therefore distinguished from the bitcoin system by not limiting itself to only recording transactions made in Ether, the unit of account based on *Ethereum*.

[Rz 4] Finally, VINCENT MIGNON focuses on DAOs. These organizations are made up of a multitude of *smart contracts* (themselves based on computer codes) that manage relationships in such

¹ VINCENT MIGNON, *Blockchains, Bitcoins and Ethers for Idiots* (Podcast), in: Jusletter IT Flash 26. Januar 2017.

² VINCENT MIGNON quotes the Federal Council, which on page 8 of its report on virtual currencies, in response to the Schwaab (13.3687) and Weibel (13.4070) postulates, dated 25 June 2014, defines the bitcoin as «a cryptographic type currency (cryptocurrency), with a payment system based on a peer-to-peer digital network. Anyone with a computer connected to the Internet can participate in this network. Its distribution and capitalisation make bitcoin the most important of the virtual currencies created to date.»

organisations and interact with each other. Despite the strong presence of computer science in DAOs, these are always dependent on Man since different actors are involved; the creators of the organisation, contractors, curators and DAO *token*³ holders.

[Rz 5] In his presentation, VINCENT MIGNON is aware of the difficulty of understanding the topic because of its high technicality, but also because of the legal uncertainties that arise from it. Indeed, many questions still remain open (what is legally a smart contract? What is the societal form of the DAOs?, etc. ...). They will be discussed throughout the conference.

2. Intervention by Pascal Witzig (10 min) «The Bitcoin – a Currency?»

[Rz 6] **Doctoral assistant in sociology at the University of Neuchâtel, PASCAL WITZIG** adopts a socio-economic approach for his intervention. He first focuses on the idea and status of money in general before engaging with the subject of bitcoin. Money has three functions in economics: a unit of value, an intermediary for trade and a reserve of value. According to PASCAL WITZIG, economic analysis focuses on *what money can do*. However, for sociologists like KARL MARX and GEORG SIMMEL, the interest of money lies in the *study of its effects*. PASCAL WITZIG recalls that an object acquires the status of money only if market participants accept it as a means of exchange and this only happens if they have trust in the durable value of the money in question. He illustrates his remarks by quoting MICHEL AGLIETTA and ANDRÉ ORLÉAN, co-authors of the book «La monnaie entre violence et confiance»⁴(«*The currency between violence and confidence*»), which warns against the fragile legitimacy of the currency. Although it is at the source of the market society, it remains dependent on an ever-changing economic context.

[Rz 7] Following these explanations, PASCAL WITZIG addresses the subject of bitcoin. Although it is possible to pay in certain places with this cryptographic currency, it is difficult, according to him, to consider bitcoin as having a currency status. Indeed, it does not fulfil the condition of liquidity since it is not subject to any legal tender. In addition, as it is not the only existing cryptocurrency, its legitimacy is disputed. Finally, according to him, bitcoin was conceived as an alternative to the conventional payment system, which should be able to operate independently of the state, governmental regulation and other institutions. With bitcoin, it's the underlying *blockchain* technology that creates trust in the system⁵. However, he remarks that somewhat paradoxically, the very intervention of the legislator to regulate bitcoin and other cryptocurrencies could be a crucial condition of their future success.

³ Each investor receives a number of units (tokens) proportional to his Ether investment in the DAO.

⁴ MICHEL AGLIETTA/ANDRÉ ORLÉAN, *La monnaie entre violence et confiance*, Paris 2002.

⁵ Whereas in the conventional payment system it's the national and international institutional encasement, that creates trust in the system.

3. Intervention by Alexis Roussel (30 min) «Decentralized Autonomous Organizations (DAOs) for Idiots»⁶

[Rz 8] ALEXIS ROUSSEL, co-founder and Managing Director of Bity.com, platform for purchases and sales of cryptocurrencies, explains what the autonomous decentralized organisations (DAO hereinafter) are. He emphasises that DAO is a new societal form in which the computer code plays a key role (*code is law*) since it binds entities that are on the *blockchain* and whose execution of the code will take place no matter what happens. He adds that human intervention in the DAO is very limited because the computer code lays down operating rules accepted in advance by all the participants.

[Rz 9] ALEXIS ROUSSEL focuses on *The DAO, smart contract* of a very large size loaded and executed on the *blockchain Ethereum*. After presenting the genesis of this DAO and the actors of the organisation, he analyses the make-up of this structure, particularly in terms of governance. He referred to the online discussion forums in which the DAO community proposes changes (such as the right to vote) in order to guarantee a better functioning of the organisation.

[Rz 10] ALEXIS ROUSSEL also addresses the weaknesses of the DAO in terms of security, weaknesses recently highlighted by a computer attack. On 17 June 2016, a group of hackers diverted the equivalent of more than \$ 50 million in Ethers by exploiting a flaw in the DAO computer code. However, *The DAO* community reacted very quickly in counter-attacking by the means of a *hard fork* allowing the cancellation of the diverted funds by the modification of the *blockchain*. After describing the course of the attack, he concluded that various lessons had to be learned. Although the community has been able to reimburse all *The DAO* investors, many reflections must be made in particular in the legal field as well as in the technological field and more particularly with respect to the immutability of the *blockchains*. ALEXIS ROUSSEL recommends the creation of a foundation to accompany the DAOs providing standards and guidance.

4. Intervention by Olivier Hari (30 min) «Cryptocurrencies and DAO: What protection for the investors?»⁷

[Rz 11] The presentation by Professor OLIVIER HARI aims to determine, from three different perspectives, the actual protection, and respectively the need for protection of the owner, and respectively the depositor of bitcoins, and the investor of bitcoins or ethereum in the framework of a DAO. For this purpose, his presentation is divided into three parts. While the first part seeks to analyse the protection of the creditor in a contractual relationship when the payment is made in virtual currency, the second part seeks to assess in which extent the depositor of virtual currencies is protected by the current financial regulation. Finally, concerning the DAO, Prof. HARI wondered about the scope of investor protection and the regulation at stake.

[Rz 12] With respect to the protection of the creditor, Prof. HARI first analysed whether the creditor may benefit from the protective effects of the DEBA⁸ in the context of payments made using

⁶ ALEXIS ROUSSEL, Decentralized Autonomous Organization (DAO) for idiots (Podcast), in: Jusletter IT Flash 26. Januar 2017.

⁷ OLIVIER HARI, The Protection of the Investors in the Fintech Context (Podcast), in: Jusletter IT Flash 26. Januar 2017.

⁸ Federal Act of 11 April 1889 on Debt Enforcement and Bankruptcy, RS 281.1 (DEBA hereinafter).

cryptocurrencies. According to art. 38 DEBA, the debt should represent, «an amount of money». Since cryptocurrencies are not considered as legal tender within the meaning of art. 2 CPIA⁹, the claim in bitcoins, ethers and others does therefore not fall within the scope of the DEBA and the holder of the DEBA can therefore not open debt collection proceedings against the debtor of a payment to be made in cryptocurrencies. The creditor must open execution proceedings (art. 338 para. 1 CPC¹⁰) before a court (art. 338 et seq. CPC), the prerequisite being that the creditor must have previously obtained an award in his favour (art. 335 para. 1 CPC) that is entered into force (art. 336 CPC).

[Rz 13] In order to assess the protection of the depositor, that is to say the owner of a *virtual wallet*, for instance in case of bankruptcy of the depository, one must first analyse whether the latter must qualify as a bank or a securities dealer in order to conduct such activity. Prof. HARI came to the conclusion that Bitcoins and ethers as «payment means» (only) shall not qualify as deposits and are therefore not subject to banking regulation; that bitcoins and ethers exchange activities «trait pour trait/zug um zug» shall not qualify as deposit and are therefore not subject to banking regulation; that bitcoins storage/trading activities are likely to be governed by banking regulation only if an account in legal tender is opened; and that bitcoins and ethers shall not qualify as securities and that trading of such is therefore not governed by the SESTA and the Financial Market infrastructure Act.

[Rz 14] If financial regulation applies, bitcoins are automatically segregated in case of bankruptcy (art. 37d BankA¹¹); if DEBA apply, the depositor must claim back the bitcoins or the ethers (art. 242 DEBA). However, in both cases, the *virtual wallet* must fulfil the characteristics of a tangible asset in order to be either claimed back or segregated. Is deemed to be a tangible asset an asset that is factually and legally controllable, suitable to be possessed and owned and whose form is physical and identifiable. Due to the storage specificities of the virtual wallet, which must be stored in a computer or a USB stick, the *virtual wallet* is a movable asset which appears to be controllable in the legal sense, like electricity. A *virtual wallet* is likely to qualify as a tangible asset; from a legal point of view, it can be claimed back in bankruptcy proceedings and is subject to segregation. However, technical requirements may make the claim for ownership/the segregation impossible, for instance if the depositor lost its private keys.

[Rz 15] Finally, since the DAO is characterised, among others, by its ability to collectivise investments, it raises the question of whether it should be classified as a collective investment scheme subject to the authorization and approval of FINMA (art. 13 et seq. CISA¹²), assuming that Swiss Law apply. A doubt remains in this respect. Indeed, on one hand, one could argue that DAO collects cryptocurrency for investment in projects; cryptocurrencies are however unlikely to qualify as assets in the meaning of art. 7 CISA, because cryptocurrencies are not legal tender and because there is no market value for such cryptocurrencies. On the other hand however, one could argue that DAO fulfils the collective nature of the investment (art. 7 CISA), that DAO investors are treated equally and are too numerous for their own will to influence investment decisions, coupled with the fact that the management of the DAO funds is influenced by the *smart contract*, which makes the DAO's decisions regarding independent investment strategy and that as a con-

⁹ Federal Act of 22 December 1999 on Currency and Payment Instruments, RS 941.10 (CPIA hereinafter).

¹⁰ Swiss Civil Procedure Code of 19 December 2008, RS 272 (CPC hereinafter).

¹¹ Federal Act of 8 November 1934 on Banks and Savings Banks, RS 952.0 (BankA hereinafter).

¹² Federal Act of 23 June 2006 on Collective Capital Investment Schemes, RS 951.31 (CISA hereinafter).

sequence the capital invested in the DAO assumes the management character by a third party (art. 5 CISO).

5. Intervention by Blaise Carron (30 min) «Aspects of contractual law»¹³

[Rz 16] **PROFESSOR BLAISE CARRON'S** remarks on the contractual law aspects of the decentralized autonomous organisations (DAO hereinafter) could be summarised in this quotation of Winston Churchill: «*Success consists of going from failure to failure without loss of enthusiasm*». Indeed, the DAO, which can be described as a simple partnership¹⁴, is faced with numerous technical and legal challenges of which solutions should be gradually implemented.

[Rz 17] After having recalled the main specificities of the DAO, **BLAISE CARRON** focuses on various contractual uncertainties. These questions relate in particular to the jurisdiction of the court in the event of a dispute. In the presence of a decentralized organisation which provides funding to a contractor¹⁵, contract law is applicable. However, it is very difficult to determine the place of jurisdiction, whether it is that of the defendant¹⁶ on account of his near anonymity, or that of the place where the obligation on which the application is based has been or must be performed¹⁷, considering the specific nature of the DAO. **BLAISE CARRON** also addresses the prickly question of the applicable law and considers that there is no choice of law¹⁸, because the computer code of the DAO does not foresee it. He then asks himself in which State the contract is the most closely connected. According to art. 117 para. 2 IPLA, such links shall be deemed to exist with the State in which the party which is to provide the characteristic obligation has his normal residence or, if the contract is concluded in the exercise of a professional or commercial activity, his establishment. By studying the various links between the players in the DAO¹⁹, **BLAISE CARRON** seeks to determine what, in each of these hypotheses, would be this characteristic obligation. According to him, the answer to be given varies according to the type of service provided. Finally, **BLAISE CARRON** analyses, considering the rules of the simple partnership, the complex relationship between actors of the organisation. He specifically focuses on the disputes that may arise in the DAO which he describes as a legal mine-field.

[Rz 18] **BLAISE CARRON** says that the simple partnership is not adapted to the DAO because this legal form is intended for a limited number of clearly identified partners who wish to operate in a stable and centralised framework. On the contrary, the DAO, constituted by actors with an almost absolute anonymity, is a decentralized organisation in which creators, investors and contractors

¹³ **BLAISE CARRON**, *Aspects of Contractual Law* (Podcast), in: Jusletter IT Flash 26. Januar 2017.

¹⁴ See art. 530 to 551 of the Code of Obligations of 30 March 1911, RS 220.

¹⁵ We are dealing with an international situation, because people of different nationalities are investing in DAO. The Convention on Jurisdiction and the recognition and enforcement of judgments in civil and commercial matters of Lugano RS 0.275.12 (Lugano Convention hereinafter) or the Federal Act of 18 December 1987 on International Private Law RS 291 (IPLA hereinafter) apply. By being decentralized, the DAO indicates its determination not to be dependent on a State and its judges. Consequently, there is no question in this case of resorting to the judge of the company's head office; art. 22 para. 2 of the Lugano Convention and art. 151 IPLA are to be discarded. Only contractual law is concerned and not that of companies.

¹⁶ Art. 2 of the Lugano Convention or art. 112 I IPLA.

¹⁷ Art. 5 para. 1a of the Lugano Convention or art. 113 IPLA.

¹⁸ Within the meaning of art. 116 I IPLA.

¹⁹ **BLAISE CARRON** focuses on the links between the DAO and the investor holding *tokens*, the DAO and the contractor, and between investors holding *tokens*.

are faced to significant legal uncertainty. Therefore, the simple partnership cannot satisfactorily respond to the high legal expectations of the DAO.

[Rz 19] In conclusion, BLAISE CARRON presents some avenues of reflection which could, in the long term, solve certain problems that face the community of the DAO and the legislator. These include improvements to the platform's computer code and that of *smart contracts* to avoid security failures. Furthermore, initially limiting the participation in the DAO to insiders who are more aware of the risks incurred, would, in his opinion, be interesting. It would also be desirable to foresee mechanisms that ensure effective internal democracy in the DAO and go beyond the simple Slack type discussion forums. Indeed, the credibility of the organisation would be strengthened. Finally, the establishment of an alternative dispute resolution mechanism in the code should be considered as well as the granting of a «digital personality» to the DAO, a body with an independent patrimony and allowing better protection for investors.

6. Intervention by Biba Homsy (45 min) «Blockchain – A financial regulatory framework?»

[Rz 20] By way of an introduction, BIBA HOMSY presented her slides on the development of the *Blockchain* as a real game-changer and how regulators progressively grasped its expansion over the past 7 years.

[Rz 21] Noting that Fintech in general, and that cryptocurrencies and DAOs in particular use *blockchain* technology to carry out transactions that were previously the prerogative of traditional actors (bank, securities dealers), BIBA HOMSY looked into the feasibility and its regulation. As a peer-to-peer, distributed technology impacting any jurisdiction, the *Blockchain* may create tie-points for regulator to apply their own domestic regulation (such as using the citizenship, the residence or location of miners, of platform's creators, of funds' receiver, or using the currencies into with cryptocurrencies are converted into, etc.). Regulators may either decide to implement an *ad hoc* regulation for the *Blockchain* or use their regular supervision applied *mutatis mutandis* to *blockchain's* activities. In addition, there is little self-regulation operated by the *blockchain's* industry so far (in cryptocurrency, smart-contracts, platforms, etc.). As a support, BIBA HOMSY articulated its presentation in three pillars: first the development of the cryptocurrencies and their evolution under regulators' watch or scrutiny, then the expansion of new innovations based on cryptocurrencies used by the private sectors which can sometimes be considered as regulated activity (such as trading platforms, or forex exchanges), and finally the focus on innovations using *blockchain's* technologies (outside the cryptocurrencies) such as smart contracts, distributed platforms, DAOs and applications, currently modestly regulated by few regulators.

[Rz 22] BIBA HOMSY then elaborated and the Swiss regulatory framework, the evolution of FINMA and the Swiss position from 2013 (Parliamentary postulates, FINMA's positions, reports, etc.) to the upcoming Fintech regulation by the Swiss Government (which encompass a possible «license light» compared to the banking licence, and a Sandbox possibility enabling professionals to experiment with new forms of Fintech by temporarily «disregarding» supervisory rules, etc.). Furthermore, a regulatory comparison on cryptocurrencies is provided between Switzerland, such as

the possible application of arts. 1–2 CPIA, or art. 81 FMIA²⁰) and other foreign regulators (such as the BitLicence in New York). With regards to the application of regulatory framework for innovations based on cryptocurrencies, the fact remains that Switzerland uses its current regulatory framework for *centralised* business to decide the application of its law, even in case of using cryptocurrencies. As such, authorisations may be required for instance under the banking act, the anti-money laundering act, the collective investment scheme. Such approach is coherent with the international regulatory framework (with various working papers from the European Commission, EBA and ESMA as well as FATF on the question), and late US Enforcement cases (from the US SEC and CFTC).

[Rz 23] Finally, the Swiss and international regulatory framework were scoped regarding smart contracts, DAOs and apps, where underlying that the regulatory framework only focuses on *centralised* entities once again, where regulations are not adapted to a decentralized and distributed nature, which does not conceptually allow the new technologies to be attached to a specific regulator or to attach a liability on a physical person or legal entity. In addition, many regulatory issues remain to be handled by regulators and standards-setters such as challenges relating to the *blockchains* «integration and resilience from global participants, the sufficient investors» and consumers' protection (in connection with potential hackings, insufficient information, the irreversibility of transfers), the issues relating to the current reporting regulations (e.g. EMIR, Dodd Frank Act, REMIT) or the issues relating the potential pseudo-anonymity offered to users towards regulators.

7. Intervention by André Kuhn (30 min) «Swiss criminal law aspects»

[Rz 24] **Professor ANDRÉ KUHN** addressed the criminal issues raised by the hijacking of \$ 50 million belonging to «The DAO» in 2016 through a smart contract. Firstly, he asked whether this capture of part of the funds of this DAO and more generally the subtraction of cryptocurrency could be described as theft in the penal sense of the term. He examined the objective²¹ and subjective²² elements of the offense of theft as advocated by art. 139 SCC²³ and came to the conclusion that, in view of the intangible character of the cryptocurrencies, they could not be regarded as «movable assets». Consequently, since all the constituent elements of the offense of theft are not realised, this characterisation of the facts cannot be upheld against the person who stole cryptocurrency.

[Rz 25] However, it remains to be seen whether the elements of the fraudulent use of a computer²⁴ (art. 147 SCC) are established. For such an offense to be recognised, it must, first of all, be assumed that the offenses against the assets apply to the virtual currencies. It is therefore imperative that these be considered as assets. The report of the Federal Council dated 25 June 2014 on virtual

²⁰ Federal Act of 19 June 2015 on Financial Market Infrastructures and Market Conduct in Securities and Derivatives Trading of 19 June 2015, RS 958.1 (FMIA hereinafter).

²¹ 1) Subtracting 2) a movable asset 3) belonging to another.

²² 1) The purpose of illegitimate enrichment; 2) the purpose of appropriation; 3) the intention.

²³ Swiss Criminal Code of 21 December 1937, RS 311.0 (SCC hereinafter).

²⁴ This offense resembles a scam for which it is not a human being who is cleverly deceived to be pushed to commit acts prejudicial to its pecuniary interests, but a machine in order to obtain an inaccurate result that will result in a transfer of assets or its concealment.

currencies clearly states that these are assets. So all offenses against the assets are likely to be also committed in cryptocurrencies.

[Rz 26] As with theft, it is necessary to examine if all the constituent elements of the offense of fraudulent use of a computer have occurred. They are, on the one hand, with regards to the objective elements, incorrect, incomplete or undue²⁵ use of data²⁶, an influence on the electronic process²⁷, obtaining an inaccurate result²⁸, a transfer of assets²⁹ or its concealment³⁰, harm to others³¹ and a causal relationship between the act and the result³², and on the other hand, with regards to subjective elements, the purpose of illegitimate enrichment and the intention³³.

[Rz 27] In the present case, after examining all these elements in the light of the present case and if the investigation demonstrates the purpose of unlawful enrichment and the intention, we can conclude that all the constituent elements of the case infringement of art. 147 SCC are established and it would be possible to apply this provision in the event of the disappearance of cryptocurrencies.

[Rz 28] But even if the typicality of the infringement seems to be given, it is still necessary to examine the unlawfulness of that typical act of an infringement³⁴. The problem is, in this case, the peculiarity of *smart contracts*, which requires that they always be authorised. So, once the conditions are fixed and approved by the parties, they are free to act within the limits set by the code of the *blockchain*. Therefore, only lawful acts are possible since an act authorised by the rules inherent in the DAO should not be regarded as unlawful («Code is Law»).

[Rz 29] However, such reasoning must be put in perspective because, if there is an intention to abuse this right, the act remains unlawful. We can start from the idea that in the case of the 50 million dollars that disappeared from «*the DAO*», we are in a case of contractual bug potentially voluntarily introduced, so as to divert the funds from their initial destination. There are therefore no supporting facts in the present case.

[Rz 30] There are still two issues to be resolved: the applicability of Swiss law and complicity. The fraudulent use of a computer is a material offense which requires a result for the infringement to be carried out. So, the assets must have been transferred or concealed. According to art. 8 SCC,

²⁵ The author of the facts although using the data correctly, here the smart contract, was not allowed to do it or at least not in this way. For further explanation, see Decisions of the Swiss Federal Supreme Court ATF 129 IV 315 and 2.1, where the Federal Supreme Court has a broad interpretation of this notion.

²⁶ This is information that is processed, stored and transmitted by computer. The data thus contains, on the one hand, information and, on the other hand, a conversion of this information into technical language.

²⁷ The result obtained must not correspond to what would have occurred if the process had proceeded normally. In the case of DAO, the element is clearly accomplished because if the process had proceeded normally, the DAO would not have lost that \$ 50 million.

²⁸ The deception of the machine must have an inappropriate result, that is to say which does not correspond to what would have been obtained if the process had proceeded correctly. In this case, the transfer of \$ 50 million to a «*child DAO*» is clearly not a normal transfer of operations.

²⁹ There is a transfer as soon as there is a change from one account to another. In the present case, the transfer of all that money to a «*child DAO*» is indeed a transfer within the meaning of that provision.

³⁰ There is concealment when the assignee conceals the existence of a transfer after a transfer of assets.

³¹ Damage of assets is required for a third party. In the case of DAO, damage of assets to investors who have purchased tokens is indeed established.

³² It is necessary to demonstrate the link between the act of improper use of the data and the result which is the transfer of assets.

³³ The author acted intentionally, that is, with consciousness and will.

³⁴ It is therefore necessary to consider whether there are facts justifying the commission of an act that is typical of an offense.

an offense shall be deemed to be committed both at the place of the act and at the place where the result occurred. There will therefore be an attachment to Switzerland as soon as the transfer or concealment of assets has affected a person in Switzerland. The transfer of assets author using fraudulently a computer within the meaning of art. 147 SCC can therefore be convicted in Switzerland if there is an injured party in Switzerland. But given that by the combination of public keys and individual keys, the authors of the transactions do not seem to be able to be identified, they do not risk much in the facts.

[Rz 31] Finally, there is the question of whether, by foreseeing the absolute anonymity of all transactions, and knowing that in computer science, it is never impossible for hackers to succeed in defrauding the system, the one who initially conceives the system and the one who sells cryptocurrencies are guilty of complicity in the fraudulent use of a computer.

[Rz 32] To answer this question, it must first be noted that complicity requires intention³⁵. If it seems unlikely that the one who created «*the DAO*» and the one who sold *tokens* intentionally wanted to give the possibility to hackers to then subtract the multi-million dollar equivalent of this DAO, art. 12 SCC mentions, however, that it is already intentional for the person who considers it's possible to carry out the offense and who accepts the result in the event that it occurs. This is what is called *dolus eventualis* in criminal law and the latter is an integral part of the intention in Swiss law. The difficulty is to determine whether, knowing that the system can be hacked, its designer accommodates himself to this crime (= intention) or rather hopes that this will not happen (= negligence). To know it, we will have to find the answer to the hypothetical question: If he had known that the result would occur, would he still have acted or would he have refrained from acting? If the court thinks he would still have acted and therefore created the DAO, then we are faced with *dolus eventualis* demonstrating the intention. On the other hand, if the court comes to the conclusion that he would have abstained from acting and that he would not have created the DAO, then it would be conscious negligence and would not be punishable for complicity in fraudulent use of a computer?

[Rz 33] In practice, courts tend to admit *dolus eventualis* when the predictability of the outcome is high and the damage is significant.

8. Intervention by Thierry Obrist (30 min) «Tax aspects of virtual currencies and DAO: identification of tax risks under Swiss law»³⁶

[Rz 34] Having found no specific standard or administrative practice regarding the taxation of cryptocurrencies and DAO, **Professor THIERRY OBRIST** recommends to rely on general principles governing Swiss tax law in order to determine the way investors, both legal persons and individuals, are treated for Swiss taxation purposes. In this regard THIERRY OBRIST distinguishes between investments in virtual currencies and in DAO but also deals with the taxation of the DAO itself.

³⁵ In order to be criminally punishable, it is therefore necessary to intentionally assist in the act of a fraudulent use of a computer.

³⁶ THIERRY OBRIST, And What About Taxes? (Podcast), in: Jusletter IT Flash 26. Januar 2017.

[Rz 35] According to the net increase of value theory³⁷, the exemption of private capital gains³⁸, and the theory of subjective provenance³⁹, any increase in the value of the cryptocurrency held in a *virtual wallet* is not considered as a taxed event as long as no income or gain is realised for tax law purposes⁴⁰. Furthermore, according to the same principles, the consideration received on the sale of virtual currency or *token* from a third party is not taxable as it is considered an exempt capital gain provided that the individual holds his investments shares in his private and non-commercial assets⁴¹. However, if certain given conditions are fulfilled, the investor can be qualified as a professional securities trader according to circular AFC n°36/2012⁴², and thus see his capital gains from his private assets being taxed as income from self-employment. Moreover, in accordance with the theory of subjective provenance, any payment made by the DAO to its investors (and therefore not received from third parties), in the form of virtual currency or not, is qualified as taxable income from movable wealth.

[Rz 36] Regarding the taxation of the DAO, the whole issue is to define whether or not it is a person for tax law purposes. In view of its decentralized and distributed nature, it is very likely to be considered as not having a legal personality and therefore being transparent. From a tax law point of view, this interpretation means that a DAO is treated transparently and all the flows through are allocated to its investors, in a similar fashion as for partnerships (art. 10 FITA). In this regard, Swiss resident investors in a DAO will be allocated a part of its income and then taxed according to the nature of the latter because the passing of this income by the partnership does not alter its initial qualification.

[Rz 37] From an international tax law point of view, a DAO presents a risk of permanent establishment⁴³, notably through its servers⁴⁴. If such a situation was to occur, then a portion of the profits of the DAO would have to be allocated to such permanent establishment. If it is in Switzerland then it creates an economic connection that allows a limited subjection. So, the combination of

³⁷ According to the net increase of value theory («principe de l'accroissement net du patrimoine»), income is defined as the difference between the wealth of a taxpayer at the beginning and at the end of a given tax period; FELIX RICHNER/WALTER FREI/STEFAN KAUFMANN/HANS ULRICH MEUTER, *Handkommentar zum DBG*, N 4 ad Vorbemerkungen zu Art. 16–39, Zurich, 2009; YVES NOËL, in: Danielle Yersin/Yves Noël (eds.), *Commentaire romand, Loi fédérale sur l'impôt fédéral direct*, Basel 2008, N 6 ad art. 16; ATF 139 II 363, consid. 2, p. 365 ff.; THIERRY OBRIST, *Comment of decision 2C_1151/2012 of 3 June 2013 (published in ATF 139 II 363)*, RJN 2010, p. 77 ff.

³⁸ Art. 16 para. 3 Federal Income Act of 14 December 1990, RS 642.11 (hereinafter: FITA).

³⁹ According to the theory of subjective provenance («*subjektives Herkunftsprinzip*»): «[...] any benefit provided from a legal person to the holder of the participation rights which results in an impoverishment of the company qualifies as taxable participation income. In this regard, the enrichment of the holder of a participation rights holding the participations in his private wealth is not decisive in distinguishing taxable participation income from tax free capital gain. To the contrary, it must be considered whether the debtor of the benefit, in this case the company, has become impoverished when the benefit is granted to its shareholder». THIERRY OBRIST, *Introduction au droit fiscal suisse*, Neuchâtel/Basel 2015, N 122.

⁴⁰ To learn more about the various forms of fiscal realisation see THIERRY OBRIST, *Le concept de réalisation systématique en droit fiscal suisse: changement de système fiscal et impôt sur le revenu et le bénéfice*, Basel/Neuchâtel 2012, thesis.

⁴¹ Cryptocurrency and DAO shares are considered to be part of the commercial assets of the individual if the latter uses them predominantly for his independent gainful activity (preponderance theory).

⁴² According to the AFC circular n° 36/2012, no professional securities trade is recognised if cumulatively the assets are held for more than 6 months, that total transactions are less than 5 times the total value of the assets, that capital gain generated by its transactions represents less than 50% of the taxpayer's income, that the assets are not financed by third-party funds and that the derivatives are only used for hedging purposes and not speculation. If one of these criteria is missing then the tax administration carries out a specific examination to determine whether or not there is a professional securities trade.

⁴³ Art. 5 para. E MC-OECD: «fixed place at the disposal of the company through which business is carried on».

⁴⁴ For criteria, see OECD Commentary, Update 2003, N 42.1 ad art 5 MC-OECD.

this economic connection with the fact that the DAO is a foreign partnership triggers the application of art. 11 FITA, which deems the DAO to be a legal person in order to facilitate the taxation of its investor, since it is easier for the Swiss tax administration to find and tax a taxpayer than to seek the whole of DAO investors.

[Rz 38] Finally, in determining whether cryptocurrencies should be considered as a currency and therefore not subject to VAT or as an asset and subject to it, nothing is currently mentioned in the VAT information of the Swiss tax authorities. However, in view of the similarity between the texts of art. 21, para. 1 n. 19 lit. d VATA and art. 135 lit. e of the European VAT Directive, the conclusions of the *Hedqvist* case in which advocate general Kokott⁴⁵ considered virtual currencies to be pure means of payment and should be treated as legal currencies from the point of view of VAT⁴⁶, can be applied to Swiss tax law.

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⁴⁵ Opinion of advocate general Kokott delivered on 16 July 2015 *Case Skatteverket vs. David Hedqvist*, C-264/14, N 15: «[...] Even though such pure means of payment are not guaranteed and supervised by law, for VAT purposes they perform the same function as legal tender and as such must, in accordance with the principle of fiscal neutrality in the form of the principle of equal treatment, (8) be treated in the same way.»

⁴⁶ CHRISTOPHE MEIER/LUZIUS MEISSER, *Bitcoin und Mehrwertsteuerfragen für EU und Schweiz geklärt*, EF 3/2016, p. 186 ff.