Taxation of virtual currency

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3 The concept of virtual currency

3.1 INTRODUCTORY REMARKS

Money is a social institution that has exhibited a great capacity to evolve and adapt to the character of the era. In early times, people used commodities as means of payment. Later on, those commodities were gradually replaced by coins and paper money.[95] For a long time, private monies were commonplace – no government even thought to claim a formal monopoly over the issue and use of money within its political territory. The notion of absolute monetary sovereignty began to emerge in the nineteenth century with the formal consolidation of the powers of the nation-state in Europe and later elsewhere in the world. Monetary instruments were standardized and the legal tender status was reserved to the national currency. The era of territorial money reached its zenith in the middle of the twentieth century with the invention of exchange and capital controls. However, this trend has clearly reversed in the recent years. Financial and monetary systems have become increasingly integrated, capital controls tend to disappear, and we see greater competition among currencies.

Money has undergone another evolution due to the development of electronic payment systems. Those systems have taken the concept of money beyond its physical and notational forms to intangible data that exists only online. Valuable physical coins and nicely printed banknotes have started playing a marginal role: money is no longer a physical object, but a large system consisting of computer networks.

The emergence of stateless virtual currencies can be seen as the next step in the process of the dematerialization of money. Virtual money can be defined as a type of unregulated digital currency which is issued and often also controlled by its developers.[96] There are many virtual currency schemes and it is not easy to classify them. This thesis distinguishes two main categories: community-related currencies (for example, Linden Dollar, Facebook Credit, virtual gold) and universal currencies (for example, Bitcoin, Ripple, Litecoin).

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95 ECB, *supra* n. 28, at sec. 1.2.

96 Id., at sec. 2.1.

The former is designed to be used by members of a specific virtual community, whereas the latter may be used by anyone to purchase goods and services.[97]

Virtual currencies have raised a series of legal questions regarding, for example, their potential use for illicit purposes and the protection of consumers using them as means of payment. Also in the area of taxation, many questions still remain unanswered. Can virtual currency be treated just like any other traditional currency for tax purposes? Is income tax due on profits realized in virtual money? How to report such profits correctly? For the tax administration, the challenge is how to approach a system that is outside the traditional streams of commerce and finance; for users – to understand the tax consequences of their transactions in virtual currencies.

3.2 COMMUNITY-RELATED VIRTUAL CURRENCIES

3.2.1 Initial remarks

Community-related currency is virtual currency used by members of a particular community, for example, a virtual world. Virtual worlds are persistent computer-generated online environments that can be accessed remotely and simultaneously by a large number of people who interact with each other for social, entertainment, educational or commercial purposes.[98] They originated from traditional computer games: *Maze War*, the first networked 3D game developed in the 1970s and played on ARPANET, can be considered as a precursor to virtual reality. In that game, players, represented as eyeballs, chased each other around in a maze, seeing the playing field as if they themselves were walking around in it. As the Internet progressed, more advanced environments called multi-user dungeons (MUDs) appeared. A MUD was a text-based virtual world with many players interacting in real time by typing commands and viewing descriptions of other players' actions. Traditional MUDs had a fantasy-oriented setting populated by fictional races and monsters. The aim of the game was to slay monsters, complete quests and advance the created character. There were also MUDs designed for educational purposes or used

97 A different classification is suggested in ECB, *supra* n. 28, at sec. 2.1. The ECB report differentiates between: closed virtual currency schemes, virtual currency schemes with unidirectional flow and virtual currency schemes with bidirectional flow. The ECB report is focused on the possibility to exchange virtual money into real money, which is a correct approach when discussing the impact of virtual money on a country's financial system and monetary policy. This thesis takes a different approach. The classification it has adopted is based on the scope of application of virtual currency, i.e. whether it can be used by anyone for any purpose or only to purchase a limited number of goods and services within a particular community. The same distinction is made by Macintosh, *supra* n. 25.

98 Chung, *supra* n. 24, at p. 104; A. Jankowich, *EULAw: The Complex Web of Corporate Rule-Making in Virtual Worlds*, 8 Tulane Journal of Technology & Intellectual Property 1, p. 3 (2006).

mainly as chat rooms. MUDs eventually led to the creation of more advanced virtual worlds.

Virtual worlds are a departure from what is traditionally considered an online game.[99] A game is a type of play activity conducted in the context of a pretended reality in which participants try to achieve at least one arbitrary, nontrivial goal by acting in accordance with agreed rules.[100] Although virtual worlds may be described as pretended reality governed by a set of rules, not all of them set goals for their participants to achieve. While there are many worlds which follow the game structure and encourage their users to move to next levels (structured worlds), there are also some that do not have fixed objectives and allow users to participate in any activities they like (unstructured worlds).

Virtual worlds are far more complex than traditional online games. In traditional games, the game world exists as long as the player is playing. Virtual worlds are persistent and exist independently of any individual's presence. They operate continuously and retain the location of an avatar and his items even if the person logged off from the program. Returning players may discover that things have changed since they last visited the world. Traditional games are designed for instant gratification and do not allow players to generate and accumulate in-game resources. Virtual worlds, in contrast, have no endings. In order to maintain the subscriber base, the developers periodically issue expansion packs or sequels to expand the world's boundaries and to introduce new features that allow players to become more powerful and skilled.

The line between the real and virtual may not be easily discernible in the virtual worlds of the 21st century. Developers of virtual worlds use three-dimensional graphics and voice technologies to create environments that mimic real life. Some people believe that virtual worlds are a parallel universe (or jurisdiction) and "real" laws (property law, criminal law) should apply there just as they function in traditional societies. They point out that virtual worlds have their own economies that are very similar to the real ones and that their currency is easily exchangeable (more easily that than the currency of some developing countries). Others claim that imitating real life cannot bring about the same consequences as real actions have. Castronova (2002) observed that

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99 Some authors use the term "game" to describe all categories of virtual worlds (for example, Castronova, *On Virtual Economies*, *supra* n. 22; C. Bradley & A.M. Froomkin, *Virtual Worlds, Real Rules*, 49 New York Law School Law Review 121 (2008)).

100 E. Adams & A. Rollings, *Fundamentals of Game Design*, ch. 1 (Pearson Prentice Hall 2007). There are many other definitions of the term "game". For example, according to the economists' definition, a game is a setting in which one or more actors choose actions that affect outcomes that they care about, given their information and beliefs about the environment and the likely actions of other actors (Bloomfield, *Worlds For Study: Invitation*, *supra* n. 85, at sec. 4). However, this definition will not be used here as it makes the meaning of a "game" identical to that of "interaction".

economic life in virtual worlds is different in many ways from life on Earth. Castronova offers the example of price controls. In real life, price controls are difficult to enforce and tend to have perverse effects. This is not the case with virtual worlds. Furthermore, quantities of virtual items on the market are easy to manipulate because game operators can create or destroy any number of virtual goods at near-zero cost by entering the right commands into the game engine.[101]

Participants can access virtual worlds by creating accounts and acting through digital two- or three-dimensional representations of themselves known as avatars. An avatar can take any form which the virtual world administrators permit. Usually participants are offered a basic character model or template that can be customized by adding physical features as the player sees fit. The term avatar was first used for the on-screen representation of players in the online role-playing game *Habitat* in 1985. It was later made popular by the series of games *Ultima* and science fiction literature. The most famous futuristic novel describing a "virtual reality" populated by avatars is *Snow Crash* by Neal Stephenson.

People visit virtual worlds for a number of different reasons. The most appealing characteristic of online environments is that they allow participants to do things they normally would not be able to do. Many people enjoy the opportunity to take over new roles and try out activities that would not be possible in real life. As most games feature elements of competition, the motivation to prove to others who has the best skills is an important reason for spending long hours in front of the computer screen. Games are often played to reduce stress or to distract oneself from daily hassle. Online communities can also be a source of social interaction and a place to find new friends.

Although many people spend time in virtual worlds for fun or as an escape from reality, some do interact in virtual spaces for real economic benefits. Many businesses and politicians established their presence in *Second Life*. IBM used this virtual world to conduct corporate meetings with the objective of reducing travel costs. Numerous universities had their own in-world campuses for teaching purposes. The American Cancer Society has used *Second Life* to raise tens of thousands of USD in charitable contributions.[102] There are also reports about students forgoing summer jobs to earn their money online.[103]

101 Castronova, *On Virtual Economies*, *supra* n. 22, at p. 4.

102 These and more examples can be found in: W.D. Terando et al., *Taxation Policy in Virtual Worlds: Issues Raised by Second Life and Other Unstructured Games*, 6 Journal of Legal Tax Research 94 (2008).

103 A. Chodorow, *Tracing Basis through Virtual Spaces*, 95 Cornell Law Review 290 (2010).

In China and other countries with low wages, an industry of gold farmers and power-levelers has emerged.[104]

3.2.2 Legal framework

Original and exclusive rights to all aspects of virtual worlds rightfully belong to the world operators and are protected by patent and copyright laws. Users gain access rights to virtual worlds through contracts with the world operators. The names of the contracts vary: they may be called "End User License Agreement" (EULA), "Terms of Use" (ToU) or "Terms of Service" (ToS).[105] The rules that users must adhere to can usually be found in more than one document. For example, on the website of *EVE Online*,[106] ten sets of rules can be found. This complexity may discourage an average user from reading the rules and make him unaware of the contractual obligations.

EULAs have the click-wrap format. A click-wrap agreement is a common contractual format in the software industry, meaning that the rules appear on screen and the participant must either agree or disagree to the terms before advancing to the next screen. When participants find these rules unsatisfying, their only option is to quit. The law in most jurisdictions supports the position that clicking the "I agree" button is sufficient to evidence the user's agreement and that the contract is enforceable even if the user did not read it.[107]

An important issue covered by the contractual arrangements is the ownership of virtual items and currency. Most of the contracts state that the whole world content belongs to the world operator. What the user receives is typically described as a ''non-exclusive, limited, fully revocable license'' to use the software and services as long as the user complies with the rules and pays the required fees. Players have to accept that they have no ownership or any other property interest in the account and all rights to the account shall be owned by the operator who may terminate it at any time. For example, *World of Warcraft's* terms of use say:[108]

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104 „Gold farming" is playing a MMORPG to acquire in-game currency and selling it in exchange for real money. It is especially popular in developing countries. A detailed analysis of this phenomenon was provided by R. Heeks in *Current Analysis and Future Research Agenda on "Gold Farming": Real-World Production in Developing Countries for the Virtual Economies of Online Games, Working Paper No. 32 (2008),* available at: www.sed.manchester.ac.uk/idpm/research/publications/wp/di/di_wp32.htm.

105 For the purposes of simplification, the legal framework laid down by the game providers is referred to here as the EULA.

106 *EVE Online* policies can be found at: http://community.eveonline.com/pnp/.

107 W.V. Vetter, *A Preliminary Investigation of Taxation of Virtual Worlds*, Tax Analysts Special Report, p. 848 (17 Mar. 2008).

108 *World of Warcraft*, Terms of Use, no. 9, available at: http://us.blizzard.com/en-us/company/about/termsofuse.html.

> 'Notwithstanding anything to the contrary herein, you acknowledge an agree that you shall have no ownership or other property interest in the account, and you further acknowledge and agree that all rights in and to the account are and shall forever be owned by and inure to the benefit of Blizzard. Blizzard does not recognize the transfer of accounts. You may not purchase, sell, gift or trade any account, or offer to purchase, sell, gift or trade any account, and any such attempt shall be null and void and may result in the forfeiture of your account.
>
> Blizzard owns, has licensed, or otherwise has rights to all the content that appear in the Service or the Games. You agree that, except as set forth in a Game EULA, you have no right or title in or to any such content, including without limitation the virtual goods or currency appearing or originating in any game, or any other attributes associated with the account stored on the Service. Blizzard does not recognize any purported transfers of virtual property executed outside a Game, or the purported sale, gift or trade in the "real world" of anything that appears or originates in a Game, unless such transfer is made using a marketplace explicitly authorized or administered by Blizzard.'

The violation of the EULA may result in various consequences: removal of virtual property, temporary ban from entering the world or permanent erasure of the virtual avatar (account termination). Broadly written terms give the providers an incredible amount of discretion that enables them to get rid of participants who they may find objectionable in any way, and it is only the provider who has the sole discretion to determine whether a violation of the EULA has occurred. The game provider usually also has the right to terminate or modify a player's account without any reason and notice, irrespective of any possible violation of the contractual arrangements. The Terms of Use of *Second Life* state as follows:

> 'Linden Lab has the right to change, limit access to, and/or eliminate any aspect(s), feature(s) or functionality of the Service (including your User Content) as it sees fit at any time without notice, and Linden Lab makes no commitment, express or implied, to maintain or continue, or to permit open access to, any aspect of the Service. You acknowledge that your use of the Service is subject to this risk and that you knowingly assume it and make your decisions to participate in the Service, contribute Content and spend your money accordingly.'[109]

The contractual rules of *World of Warcraft* are very similar:

> Blizzard may suspend, terminate, modify, or delete accounts at any time for any reason or for no reason, with or without notice to you. Accounts terminated by Blizzard for any type of abuse, including without limitation a violation of these

109 Second Life, Terms of Use, no. 1.2, available at: http://lindenlab.com/tos#tos9 .

> TOU, a Game-specific Terms of Use, or a Game EULA will not be reactivated for any reason.[110]

Some scholars have advocated the idea that participants should have some level of property rights[111] in the virtual items they acquire and create, regardless of the EULA provisions.[112] They argue that clauses limiting property rights are unconscionable for the following reasons. First, although virtual items exist only on screen, the current technology allows them to mimic real objects. They are persistent and do not cease to exist if the player goes offline. Second, users put a lot of time and efforts in developing high-level avatars and finding precious virtual objects. Computer code that is designed to act like real property should be regulated and protected like real property.[113] The recognition of virtual property rights of users should not threaten the intellectual property interest held by the creator of the property, but provide protection for someone whose virtual assets are misappropriated or destroyed by a hacker.[114]

Another argument for disregarding the EULA and giving users some property rights rests on the claim that the EULAs are sufficiently close to contracts of adhesion which courts frequently disregard on public policy grounds. However, unlike in the case of contracts of adhesion, virtual world users have realistic alternatives. Even assuming that the contract is offered on a take-it-or-leave-it basis and inflicts substantial unfairness on the player (in requiring the player to waive all copyright), the player is not the weaker party, but has plenty of alternative choices. He can play other games or participate in other virtual environments.[115]

Thus, despite users' potential influence on virtual worlds' operation, there is little legal basis for any user's claim to property rights in avatars or virtual items. Participants have contractual rights to use the game and no more. Although virtual items have the same roles and functions as things and

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110 World of Warcraft, Terms of Use, no. 7, available at: http://us.blizzard.com/en-us/company/about/termsofuse.html.

111 It is important to note that the concept of property means different things in different countries. In common law countries, "property" comprises rights with respect to the asset but not the asset itself. Thus, the ownership of a piece of land is actually the ownership of a bundle of rights in relation to the land but not ownership of the earth itself. A person who owns the entire bundle of rights related to an asset is said to have a "fee simple" interest in the asset but the bundle can be separated into an infinite number of separate rights and those, in turn, can be transferred to an infinite number of separate owners. *See* R. Krever, *Interpreting income tax laws in the common law world* in: *Steuerrecht, Verfassungsrecht, Europarecht. Festschrift für Hans Georg Ruppe,* p. 361 (Facultas Verlags- und Buchhandels AG 2007).

112 Fairfield, *Virtual Property, supra* n. 23; Westbrook, *supra* n. 23; Vacca, *supra* n. 23.

113 Fairfield, *Virtual Property*, *supra* n. 23, at p. 1048.

114 Id., at p. 1096.

115 Camp, *supra* n. 24, at p. 51.

services have in the real world, they are only consensual constructs of limited scope. The mere belief by game players that they have – or should have – property rights does not necessarily mean that they do, and the mere fact that they act like property owners, for example, by selling certain items, does not necessarily mean that they are. If a museum displaying, but not owning, a painting tried to exploit the perception that it is the painting owner by attempting to sell it, the sale would not make the museum the rightful owner, nor would it make the transaction legitimate.[116]

Assigning virtual property rights to players should not be considered a mandatory legal obligation but rather a policy decision made by the game developer.[117] So far, virtual world administrators have argued against granting property rights, both because it interferes with their ability to regulate activities in their virtual environments and because it burdens them with unwanted responsibilities and may subject them to liability for events that are beyond their control. An online environment is an immense undertaking that requires constant attention and takes substantial time to develop. If its operators were not able to make adjustments or control its contents, the virtual world could implode or freeze.[118]

On the other hand, players have legitimate expectations regarding the virtual products of their labour. The most important feature of a virtual world is the complexity of social interactions among its members – a feature not offered by the developers but created solely by the players whose social and emotional input fuels the persistence and expansion of the virtual community.[119] The law and jurisprudence must reflect on this contribution when evaluating the legality of a given EULA. By acknowledging the players' contribution to the online environment, the developers should provide solid justifications of their decisions to cut off a player from the game (for example, due to a violation of the contractual obligations or termination of the service). The players' virtual presence in the game should be guaranteed and protected by the courts as long as the users respect the EULA. The protection of the player's rights vis-à-vis other participants should be ensured, first and foremost, by the game operator itself. The enforcement of the EULA is relatively simple within a virtual world. Users can report other individuals who disrupt the game or violate the code of conduct. Such reports should be investigated by the system administrator and proper action should be taken. Only if the operators fail to provide an appropriate remedy, the courts should step in to adjudicate the matter.

Finally, it is important to note that although tax law frequently uses private law concepts (for example, property) to define tax liability, it must be inter-

116 Lederman, *supra* n. 24, at p. 1639.
117 Volanis, *supra* n. 23, at p. 332.
118 Vetter, *supra* n. 107, at p. 849.
119 Volanis, *supra* n. 23, at p. 339.

preted according to its own policies. Tax law is independent from private law.[120] In Germany, the Constitutional Court (*Bundesverfassungsgericht*) rejected any notion that civil law terms used in tax law should be interpreted according to their civil law meaning.[121] In the United States, private law differs from state to state, so a reference to private law could lead to lack of uniformity in federal tax law. For example, the Supreme Court held that where income tax used the term sale, this term was to have a meaning peculiar to income tax law rather than referring to whether a transaction constituted a sale under state private law.[122]

Transactions in virtual items are referred to here as "sales" although they may not constitute "sales" from private and commercial law perspective. However, they are considered as such by the parties involved: the intention of the "seller" is to transfer the actual power to dispose of a virtual item to the "buyer". After the transaction is complete, the "seller" can no longer use the item.

3.2.3 Types of virtual worlds

3.2.3.1 Initial comments

Although there is much diversity among virtual worlds and each one is unique, two main categories of virtual worlds can be distinguished: structured worlds[123] and unstructured environments.[124] Structured worlds resemble traditional computer games as they have defined objectives and a significant amount of operator-developed content. Unstructured worlds lack pre-set challenges and utilize more user-generated content. The both environments are designed to encourage transactions between participants. The next sections look at both types of virtual worlds in more detail.

3.2.3.2 Structured worlds

Game-like worlds put players into strongly pre-defined roles within the context of an overall storyline. Each role has its pre-programmed strengths and weaknesses. Subscribers choose to play one of several characters (troll, dwarf and druid) and give their avatars some primary professions (alchemy, mining and blacksmithing). In a fantasy-oriented world, avatars engage in quests, raids

120 V. Thuronyi, *Comparative Tax Law*, p. 125 (Kluwer Law International 2003).
121 BVerfG, 27 Dec. 1991, 2 BvR 72/90, BStBl. II 1992, 212.
122 *Burnet v. Harmel*, 287 US 103 (1932).
123 Also known as massive multiplayer online role-playing games (MMORPGs), scripted worlds, game-like worlds or leveling worlds.
124 Also called unscripted worlds or social worlds.

and fights against opposing forces. For each mission accomplished, they are rewarded with better skills, weapons and virtual currency. An important factor is cooperation among players. To facilitate quests avatars band together to form guilds – groups consisting of about forty members – and engage in cooperative exchanges.

As avatars gain experience from completing certain tasks, they get promoted to higher levels where quests are more difficult but, at the same time, more powerful weapons and armor may be obtained. This is called "leveling" – players start at level one and through their activities they level up their avatars to more intricate and harder game play. As the structure of many virtual worlds makes it difficult, time-consuming and even boring to level up avatars to the point where they have substantial skills and resources, some people reach for shortcuts. Valuing time over money, these players go outside the game to purchase game-based resources or high-level avatars.[125]

For a better understanding of the functioning of game-like worlds, a description of two of them (*World of Warcraft* and *EverQuest*) can be found below.

World of Warcraft

World of Warcraft (WoW)[126] is undoubtedly one of the most popular MMORPG with over 10 million subscribers in 2012.[127] Since its release by Blizzard Entertainment in November 2004, the game has experienced phenomenal growth and dominated the online game market. *World of Warcraft* requires the player to pay a subscription fee, either by buying prepaid game cards for a selected amount of playing time or by using a credit or debit card to pay on a regular basis.[128]

The game takes place within the world of Azeroth, a virtual environment full of magic and mystery, where players assume roles of heroic fantasy characters. To create a new avatar, players must choose between the opposing factions of the Alliance or the Horde, and subsequently select the new character's race, such as orcs or trolls (for the Horde), humans or dwarves (for the Alliance). Players are not limited to one character but can keep a roster of up to 50 avatars. The game involves the completion of quests, which means that players encounter computer–controlled characters which give them different tasks. Quests usually reward the player with experience points, items, and in-game money. They also allow characters to gain access to new skills and abilities, and explore new areas. Some of the rewards received are bound to

125 Purchasing virtual items for real money is called real-money trade (RMT). A detailed description of this phenomenon can be found in section 3.2.4.3. *Real Money Trade (RMT)*.

126 *See* http://eu.battle.net/wow/en/ and http://us.battle.net/wow/en/.

127 A. Holisky, *World of Warcraft subscriber numbers dip 100,000 to 10.2 million* (9 Feb. 2012), available at: http://wow.joystiq.com/2012/02/09/world-of-warcraft-subscriber-numbers/.

128 *See* http://eu.battle.net/wow/en/shop/game-purchase/.

the avatar and cannot be traded, generating a market for the trade of accounts with well-equipped characters (the price may even reach a few thousand USD). Within the game, participants can store their virtual objects in virtual banks. If they have objects that they do not need any more or they are searching for a particular valuable item, an in-game auction house is the right place to visit. Such a house enables players to put virtual objects up for auction and to obtain virtual currency from their sale.[129] In-world transactions are permitted and fully supported by the operator of *World of Warcraft*. In contrast, the practice of buying and selling virtual gold for real money is strictly prohibited by the game operator.

EverQuest

EverQuest,[130] originally launched in 1999 by Sony Online Entertainment, was one of the first MMORPGs to achieve great success and notoriety in the genre. Its environment is similar to that of *World of Warcraft*. Players use pre-programmed avatars to explore the fantasy world of Norrath, complete quests, fight monsters for treasure and experience points, and master their trade skills. As they reach new levels, they gain power, prestige and new abilities. The game has spawned a large number of successful expansion packs, continually adding to the world of Norrath new elements. In 2004, a game sequel, *EverQuest II*, was released.[131] The game can be played for free; however, more advanced elements are available only to players with premium membership (the fee ranges from USD 5 to USD 15).[132]

EverQuest was the first virtual world to draw attention of the scientific community. A study conducted by Professor Edward Castronova from California State University examined the virtual economy of Norrath (the virtual world of the game *EverQuest*) as if it was a normal economy with statistics covering such activities as production, labor supply, income, inflation, foreign trade, and currency exchange. The study asserted that Norrath's gross national product, as it related to the value of virtual goods in the real world, exceeded USD 135 million, which ranked Norrath as the 77th largest economy in the world, slightly larger than Bulgaria.[133] Norrath's economy supported an hourly wage of USD 3.42 and the value of one Norrathian platinum piece was greater than that of the Japanese yen.[134]

Sony Online Entertainment was the first world developer to explicitly permit sales of virtual MMORPG assets for real money. In 2005, it introduced

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129 *World of Warcraft*, Beginner's guide, available at: http://eu.battle.net/wow/en/game/guide/.
130 *See* http://everquest.station.sony.com/.
131 *See* http://www.everquest2.com/.
132 *EverQuest*, Free to play, available at: http://www.everquest.com/free.
133 Castronova, *Virtual Worlds: A First-Hand Account of Market and Society on the Cyberian Frontier*, *supra* n. 22, at p. 33.
134 Id., at pp. 31-33.

an auction system called Station Exchange, where game players could pay cash for virtual weapons and other goods.[135] During the first 30 days of operation, the system supported transactions in value exceeding USD 180,000 with valuable items sold for a few thousand USD. It was estimated that an average Station Exchange participant spent more than USD 70 during that time.[136] Although real money trade is permitted on the Station Exchange, the Terms of Service state that Sony Online Entertainment exclusively owns all copyrights and all other intellectual property rights to all game content.[137] Users must acknowledge that they do not acquire any of those ownership rights by downloading copyrighted materials from the Station Exchange.[138] Real money trade on other auction websites still remains prohibited.

3.2.3.3 Unstructured worlds

Unstructured virtual environments lack a set storyline. They have no pre-defined characters, skills and levels. The world owner provides the basic environment, but it is the users who decide on the vast majority of the world's content. This type of virtual worlds is dedicated almost exclusively to social interaction – as there are no pre-defined objectives, players just spend their time engaging in various online activities. Unscripted worlds provide a platform for all sorts of real-world activity: avatars might set up a business, go to concerts, marry a partner or travel to exotic locations with other avatars.[139] However, unstructured worlds are not just about avatars interacting with each other for entertainment; they also include virtual currencies that allow participants to buy and sell goods and services.

Sometimes the term "MMORPG" or "MMOSG" (Massively Multiplayer Online Social Games) is used to refer to unstructured worlds.[140] However, those worlds lack the usual game characteristics. They contain neither a storyline nor levels. Virtual participants themselves determine what they want to do

135 E. Reuveni, *On Virtual Worlds: Copyright and Contract at the Dawn of the Virtual Age*, 82 Indiana Law Journal 261, p. 267 (2007).

136 D. Terdiman, *Sony scores with Station Exchange*, CNET News (25 Aug. 2005), available at: http://news.cnet.com/Sony-scores-with-Station-Exchange/2100-1043_3-5842791.html.

137 *EverQuest*, Terms of Service, no. IV.C, available at: http://help.station.sony.com/app/answers/detail/a_id/15630/session/L2F2LzEvdGltZS8xMzQwNjUyNjIyL3NpZC9TU3prWnpfaw%3D%3D.

138 *EverQuest*, Terms of Service, no. VII.A, available at: <http://help.station.sony.com/app/answers/detail/a_id/15630/session/L2F2LzEvdGltZS8xMzQwNjUyNjIyL3NpZC9TU3prWnpfaw%3D%3D.

139 Reuveni, *supra* n. 135, at p. 265; T. Miano, *Virtual World Taxation: Theories of Income Taxation Applied to the Second Life Virtual Economy* (2007), available at: http://works.bepress.com/timothy_miano/1; Camp, *supra* n. 24, at pp. 7-8.

140 Camp, *supra* n. 24, at p. 3, IRS Report 2008, *supra* n. 32, at p. 214; Chung, *supra* n. 24, at p. 104.

and how they each want to shape their environment. Therefore, unstructured environments cannot be described as games.

For a better understanding of the functioning of unstructured worlds, a description of two of them (*Entropia Universe* and *Second Life*) can be found below.[141]

Entropia Universe

Entropia Universe[142] is a virtual environment with a real cash economy launched by the Swedish software company MindArk in 2003. It can be downloaded and played for free. The real cash economy means that the internal virtual economy is linked to the real economy by a currency called the Project Entropia Dollar (PED), which has a fixed exchange rate linked to the USD (10 PED equals 1 USD). This means that virtual items acquired within *Entropia Universe* have a real cash value, and participants may transfer their accumulated PED back into real currency, which enables them to earn real money from the game with the approval of the game operator. MindArk acknowledges the responsibility to maintain records on all transactions in virtual items which occur via their approved systems.[143] To deposit or withdraw funds from *Entropia Universe*, participants must provide MindArk with their accurate personal information and bank account data.[144]

Entropia Universe does not have levels, but allows its users to choose the course of action they wish to pursue. Participants play the role of colonists exploring and developing virtual planets (Calypso, Rocktropia, Next Island, Arkadia and Cyrene). Calypso is the oldest planet in *Entropia Universe* with over one million registered accounts and over USD 400 million in user-to-user transactions in 2011.[145] As Calypso is a recently discovered planet, the colonists need to establish their own economy and build up their society. This involves a lot of cooperation and specialization. Despite its science fiction setting, *Entropia Universe* is equipped with many features of an ordinary society. To integrate real banking systems into *Entropia Universe*, MindArk granted exclusive licenses to operate virtual banks within the online environment. Those banks function similarly to real ones: they lend money to par-

141 *Entropia Universe* is sometimes referred to as a structured world based on its fantasy setting (Chung, *supra* n. 24, at p. 114, Chodorow, *Ability to Pay and The Taxation of Virtual Income*, *supra* n. 24, at p. 700). This approach is incorrect as *Entropia* lacks levels, which are the essential feature of game worlds.

142 *See* http://www.entropiauniverse.com/.

143 *Entropia Universe*, Terms of Use, no. 6.1, available at: http://legal.entropiauniverse.com/legal/terms-of-use.xml.

144 *Entropia Universe*, Terms of Use, no. 3.1, available at: http://legal.entropiauniverse.com/legal/terms-of-use.xml.

145 Entropia Universe Bulletin, *Entropia Universe introduces citizenship and revenue sharing system* (16 Nov. 2011), available at: www.entropiauniverse.com/bulletin/buzz/2011/11/16/Calypso-Land-Lot-Deeds.xml.

ticipants, collect interest, design their own virtual buildings and make their own personnel available through avatars.

Entropia Universe featured many high-value transactions and even entered the Guinness World Records Book for the most expensive virtual world objects ever sold. In 2004, a virtual "treasure island" was purchased for USD 26,500, which was the highest price ever paid for a virtual item at that time. The 22-year old purchaser made money from his investment by selling land plots to people who wished to build virtual homes there and by taxing other gamers who came to his virtual land to hunt or mine for gold.[146] A year later, a virtual Asteroid Space Resort was bought by Jon Jacobs for USD 100,000, greatly surpassing the sale of the treasure island.[147] In order to purchase the virtual resort, Jacobs took the huge gamble of mortgaging his own house. The asteroid was named Club Neverdie after Jacobs's avatar and turned out to be a profitable investment. In 2010, it was sold to various other *Entropia Universe* participants for a total of USD 635,000.[148] Another story which hit the headlines featured Mike Everest, a high school senior from Colorado, who earned USD 35,000 by constructing and selling *Entropia* virtual weapons. Some of this money was used to fund college education for his siblings. Everest achieved his income by playing the game for an average of three hours per day.[149]

According to the EULA, MindArk retains all rights, titles and interests in accounts and virtual items. Participants merely obtain a licensed right to use a certain feature of the virtual world. No ownership is obtained for "purchased" or "constructed" objects.[150] MindArk reserves the right to terminate or lock a user's account at its sole discretion.[151]

Second Life

This most sophisticated of all the virtual environments is *Second Life*[152] – an unstructured world developed in 1999 by the Californian company Linden Lab. There is no charge for creating a *Second Life* account or for making use of the world for any period of time. A subscription fee must only be paid for premium membership.

146 BBC News, *Gamer buys $26,500 virtual land* (17 Dec. 2004), available at: http://news.bbc.co.uk/2/hi/technology/4104731.stm.

147 BBC News, *Gamer buys virtual space station* (25 Oct. 2005), available at: http://news.bbc.co.uk/2/hi/technology/4374610.stm.

148 D. Bates, Internet estate agent sells virtual nightclub on an asteroid in online game for £400,000 (18 Nov. 2011), available at: http://www.dailymail.co.uk/sciencetech/article-1330552/Jon-Jacobs-sells-virtual-nightclub-Club-Neverdie-online-Entropia-game-400k.html.

149 N. Tiwari, *Teen pays siblings' college fees by selling virtual weapons*, CNET News (10 Oct. 2006), available at: http://news.cnet.com/8301-10784_3-6124572-7.html.

150 *Entropia Universe*, End User License Agreement, no. 4.1, available at: http://legal.entropiauniverse.com/legal/eula.xml.

151 *Entropia Universe*, Terms of Use, no. 3.1, available at: http://legal.entropiauniverse.com/legal/terms-of-use.xml.

152 *See* http://secondlife.com/.

Second Life world mirrors life on Earth, as it has no fixed objectives and its inhabitants decide on the world's composition. *Second Life* does not have content that is not created by the users. This means that if a player wants a house for his character, he needs to build one; if a person wants to play a game, someone needs to design the game and insert it into the online world; and if a person wants to change the clothes of his character, he needs to make or buy them. *Second Life* provides an object editing tool that allows users to design objects by shaping and coloring small building blocks known as "primitives". Each block has parameters, like a Global Positioning System (GPS) coordinates, and when a Linden Lab server reads those parameters, the block is converted into whatever it describes.[153]

Residents can explore the world, meet other residents, socialize, participate in various activities, create and exchange virtual items with one another. Virtual life takes place on islands (parcels of virtual land). Users purchase new virtual land directly from Linden Lab or acquire existing land from other members. A fee for the right to use the virtual land must be paid to Linden Lab.

Participants start with a standard avatar model which they can customize either by using the *Second Life* client program or by purchasing items produced by other residents with the in-game currency Linden Dollars. According to the Terms of Service, each Linden Dollar is a virtual token representing contractual permission from Linden Lab to access features of the virtual environment. Linden Dollars are available for purchase or distribution at Linden Lab's discretion and are not redeemable for monetary value from the game operator.[154] The digital currency forms the backbone of *Second Life's* virtual economy. Residents may convert Linden Dollars into USD at the LindeX Currency Exchange. This is a two-way transaction: for every participant who wishes to convert Linden Dollars, there needs to be an individual with real currency who is seeking to buy them. However, the world operator reserves the right to deny, reverse or suspend any LindeX exchange transaction.[155] As the Linden Dollar has an exchangeable real currency value, users can effectively turn each profitable virtual transaction into a potential real gain, leading some participants to turn to *Second Life* as their entire source of income. With a little start-up capital and the right investments or an industrious business sense, it is quick and easy to earn a sizable amount of in-game currency.

Linden Lab allows users to retain intellectual property rights in virtual items that they create. By doing that, Linden Lab guarantees that they will

153 Second life Wiki, Primitive, available at: http://wiki.secondlife.com/wiki/Primitive.

154 *Second Life*, Terms of Service, no. 4.5, available at: http://secondlife.com/corporate/tos.php?lang=en-US#tos7.

155 *Second Life*, Terms of Service, no. 4.6, available at: http://secondlife.com/corporate/tos.php?lang=en-US#tos7.

not challenge a user who tries to sell his virtual items. The operator actually promotes exchanges of virtual goods among users by maintaining a *Second Life* Marketplace, where users can trade using real or virtual currency. The marketplace functions just like eBay by charging the seller a five-percent commission.[156] As participants are the owners of the intellectual property rights in the objects they create, the sale of *Second Life* items is also permitted by eBay and other websites. *Second Life* users can not only design ad sell their own goods, but they can also arbitrage the exchange rate. Virtual arbitrage works when the user purchases Lindens at a lower exchange rate, then purchases virtual goods with Lindens, and finally sells the good for cash at a higher exchange rate than that of the Lindens. The successful *Second Life* salesman is free to cash out his earnings at any time by using the LindeX.[157]

All participants must grant Linden Lab a non-exclusive, worldwide, royalty-free, sublicenseable, and transferable license to use, reproduce and distribute items they upload or create in the virtual environment. Section 2.3 of the Terms of Service reads:[158]

> '(…) you hereby grant to Linden Lab, and you agree to grant to Linden Lab, the non-exclusive, unrestricted, unconditional, unlimited, worldwide, irrevocable, perpetual, and cost-free right and license to use, copy, record, distribute, reproduce, disclose, sell, re-sell, sublicense (through multiple levels), modify, display, publicly perform, transmit, publish, broadcast, translate, make derivative works of, and otherwise exploit in any manner whatsoever, all or any portion of your User Content (and derivative works thereof), for any purpose whatsoever in all formats, on or through any media, software, formula, or medium now known or hereafter developed, and with any technology or devices now known or hereafter developed, and to advertise, market, and promote the same. You agree that the license includes the right to copy, analyze and use any of your Content as Linden Lab may deem necessary or desirable for purposes of debugging, testing, or providing support or development services in connection with the Service and future improvements to the Service.'

The ToS agreement also stipulates that members lease rather than own their virtual accounts. Linden Lab has the right to suspend or terminate an account (due to agreement violation or when it is necessary or advisable to protect the interests of the operator or any third party).[159] Moreover, Linden Lab has the right to change and eliminate any aspects of the online environment

156 Second Life Marketplace, *SL Marketplace Fees and Commissions*, available at: https://marketplace.secondlife.com/listing guidelines.

157 E. Roscoe, *Taxing Virtual Worlds: Can the IRS PWN You?* 12 Pittsburgh Journal of Technology Law and Policy, p. 6. (2011).

158 *Second Life*, Terms of Service, no. 2.3, available at: http://secondlife.com/corporate/tos.php?lang=en-US#tos7.

159 *Second Life*, Terms of Service, no. 5, available at: http://secondlife.com/corporate/tos.php?lang=en-US#tos7.

as it sees fit at any time without notice, and participants must acknowledge that their virtual activities are subject to this risk.[160] Linden Lab has exercised its right to terminate accounts in the past for what it considered to be unethical or unlawful behavior. In 2006, a *Second Life* member named Marc Bragg found a way to purchase virtual land for amounts below the market rates. After he purchased virtual real estate for thousands of USD in this way, Linden Lab terminated his account. Bragg sued Linden Lab over the termination. The suit was ultimately settled with a confidential agreement before the final decision was reached.[161]

If there is real money being exchanged, real enterprises are close behind. Several businesses, such as Dell, Reuter and Adidas, established a virtual presence in *Second Life*. A few prominent universities (INSEAD, Harvard Law School) offered classes on virtual islands.[162] Even politicians have begun to establish a virtual presence.[163] In October 2005, the US Department of Homeland Security purchased a virtual island in Second Life and started monitoring in-world transactions for aberrant activities.[164] The first country to open an embassy in *Second Life* was the Maldives. In the virtual embassy, visitors were able to talk with a computer-generated ambassador about visas, trade and other issues. In 2007, Sweden became the second country to open an embassy in *Second Life*. The embassy served to promote Sweden's image and culture, rather than providing any real or virtual services.[165]

Second Life reached its top popularity in the mid and late 2000s. In 2006, its economy had an annual gross domestic product of about 64 million USD.[166] Later on the popularity of Second Life declined as other competitors appeared on the market.

3.2.4 Trade in virtual worlds

3.2.4.1 Initial comments

In both game-like and unstructured worlds, an essential activity is the acquisition and creation of virtual items. In all structured worlds, avatars must

160 *Second Life*, Terms of Service, no. 1.2, available at: http://secondlife.com/corporate/tos.php?lang=en-US#tos7.

161 Dougherty, *supra* n. 7.

162 D.A. Bray & B.R. Konsynski, *Virtual worlds, Virtual economies, Virtual institutions*, p. 2 (2006), available at: http://papers.ssrn.com/sol3/papers.cfm?abstract_id=962501.

163 C. Lagorio, *Running for President in a Virtual World*, CBS News (11 Feb. 2009), available at: www.cbsnews.com/stories/2007/04/02/politics/main2639476_page2.shtml?tag=contentMain;contentBody.

164 Bray & Konsynski, *supra* n. 162, at p. 7.

165 *See* http://www.sweden.se/secondlife.

166 A. Newitz, *Your Second Life is ready*, Popular Science (9 Jan. 2006), available at: www.popsci.com/scitech/article/2006-09/your-second-life-ready?page=2.

participate in the online economy to advance the storyline and to increase their strength and notoriety. Although unstructured worlds do not require participation in the virtual economy, community residents wishing to increase their social status must get involved in virtual item trade.

Avatars obtain virtual items in three different ways. First, they obtain them from the world operator: low-value items can often be found while exploring the environment, but high value loot is typically earned by killing a computer-generated character or completing a quest (this type of acquisition is known as a drop).[167] Second, participants are able to create virtual objects by themselves. In structured worlds, they gather the necessary ingredients and click on all of them in the proper order to produce a new item. This is commonly referred to as crafting.[168] In unstructured environments, like *Second Life*, they can make use of a simple programming tool. Third, users get virtual items and currency from other users in exchange for either real or virtual currency. Those transactions are referred to here as real money trade (RMT) and in-world transactions (IWT), respectively, and are described in more detail in the following sections.

3.2.4.2 In-World Transactions (IWT)

The most common way to obtain new items is to purchase them within the game environment. In-world transactions (IWT)[169] might take the form of swapping virtual items for other virtual items or swapping virtual items for in-world currency. In some environments, avatars also provide virtual services for in-world currency.

Both structured and unstructured worlds facilitate trade activities through the use of an in-world medium of exchange. In *World of Warcraft*, the top unit of in-world currency is called Gold and is broken down into subunits called Silver and Copper. In *Second Life*, the sole unit of currency is the Linden Dollar, which can be purchased using USD and other currencies on the LindeX Exchange.

Community-related virtual currency is frequently compared to casino chips or "money" used in board games. *Second Life* is sometimes referred to as a high-tech version of *Monopoly*, a board game where players use fake money to buy and develop imaginary land. Although the economic activity in both games is similar, there are significant differences between *Monopoly* and *Second Life* currency: the latter has a USD exchange rate. It has an actual monetary value and enabled some of its users to become real millionaires – a result not

167 Lederman, *supra* n. 24, at p. 1628.

168 Camp, *supra* n. 24, at p. 10.

169 They are also called virtual-to-virtual transactions (*see* D. Mack, *iTax: an Analysis of the Laws and Policies behind the Taxation of Property Transactions in a Virtual World*, 60 Administrative Law Review, p. 751 (2008)).

possible in *Monopoly*. No one would buy an imaginary building in *Monopoly* by paying real money. Furthermore, *Second Life* is not limited to a particular geographical location, as it can be accessed from any computer in the world. It is not restricted to a particular number of players and anyone can join its online community. The amount of its virtual money is infinite.

Another analogy to *Second Life* may be the game of poker played in casinos. Poker players use chips to represent the wealth accrued during game and exchange them for currency when they cash out. If a casino worker confiscated a player's chips, there would be no doubt that the worker had taken property from the player. Chips have value but only during the poker game. If you use them outside the game context, their value is insignificant (they are merely treated as plastic tokens). That is also the case with virtual objects and currency – although they may be sold on various auction sites outside their virtual environment, they are transferred within the particular world to which they belong. Just as poker chips can be used only in the casino in which they were earned or bought, community-related virtual currency and objects can be used only within one particular world; for example, a *World of Warcraft* player could neither use Linder Dollars to buy in-world resources he needs nor exchange Linden Dollars for virtual gold within his game environment.

3.2.4.3 Real Money Trade (RMT)

Trade in virtual items began within the boundaries of virtual worlds but later on gradually expanded outside their limits: avatars and other virtual objects started being exchanged on eBay and other auction sites for real currency. Real money trade can be described as transactions that take place at least in part in the real world. It can occur in two ways. First, a virtual item can be transferred within a virtual world with a consideration passing in the real world. This is usually a two-step process: on an Internet platform the buyer and the seller agree to meet in the virtual world and to transfer the purchased item. The deal is closed within the game environment. From the game perspective, the item is transferred for no charge.[170] Second, a real item can be transferred in the real world, with consideration passing in a virtual world. There have been rumors about drug dealers who accepted payments only in Linden Dollars; such payments were both convertible into USD and impossible to trace.[171]

Initially game-like worlds had little connection with money. They intended to promote game play and not economic activity. However, many players who wanted to engage in high-level quests had little time for entertainment. Instead of earning weapons and protective armor needed to level up their avatars, they started purchasing the necessary items from other players who had more

170 Chung, *supra* n. 24, at p. 108.
171 Seto, *supra* n. 24, at p. 5; Camp, *supra* n. 24, at pp. 12-14.

free time on their hands. Other players quickly noticed that they might make money out of their hobby and this is how real money trade began.[172] In the early days of virtual structured games, RMT was completely forbidden. Companies feared that if some players found shortcuts to higher achievement, other players might become dissatisfied with the game, especially with the fact that others level up their avatars due to available cash and not due to their skills. If an external factor, such as financial status, mattered within the game, the barriers between real and in-game live would break down and in-world efforts of many players would be devalued.[173] Moreover, the opportunity to earn real money from computer games encouraged hacking. Blizzard reported that a large proportion of all gold bought on third-party auction sites originated from hacked accounts.[174] Thus, before entering the virtual world, players must agree that they will neither gather in-game currency and items for sale outside the virtual world nor perform in-game services in exchange for real money (power-leveling).[175] They must also acknowledge that the whole online environment (including any titles, computer code, themes, objects, characters, stories, dialogue, artwork, animations, sounds, musical compositions, and audio-visual effects) are copyrighted works owned by the game operator.[176]

Forbidding RMT has led to a strong underground black market in virtual property. Many companies began to specialize in leveling services and made millions of dollars capitalizing on this underground market. There are several websites exclusively devoted to brokerage activities for virtual environments. For example, IGE describes itself as: "a diversified service provider operating the world's largest secure network of buying and selling sites for massively multiplayer online game virtual currency and assets on the Internet".[177]

RMT supporters argue that this activity benefits the online gaming experience and expands the user base. Many people participate in MMORPGs in order to socialize with friends. The fact that some participants cannot devote much time to the game or enter the virtual world later than others presents difficulties when friends try to participate in group adventures. RMT helps remove this difference by reducing the weaknesses of newcomers and allowing them to make a greater contribution to the quests.[178]

Some game providers realized that RMT could be taken out of "pirate" hands and used as an additional revenue source. In June 2005, Sony Online

172 Lederman, *supra* n. 24, at pp. 1628-1629.
173 Chung, *supra* n. 24, at p. 109.
174 *World of Warcraft*, The consequences of buying gold, available at: http://eu.battle.net/wow/en/services/anti-gold/.
175 *See*, for example, *World of Warcraft*, Terms of Use, no. 2, available at: http://us.blizzard.com/en-us/company/about/termsofuse.html.
176 *See*, for example, *World of Warcraft*, Terms of Use, no. 9, available at: http://us.blizzard.com/en-us/company/about/termsofuse.html.
177 IGE, Our business, available at: www.ige.com/about.html.
178 Chung, *supra* n. 24, at p. 110.

Entertainment was the first game-world developer to explicitly permit real world sales of virtual assets in *EverQuest II*.[179] However, many companies are still reluctant to allow RMT. In the *World of Warcraft's* Terms of Use, it reads that players may neither sell in-game items or currency for real money nor trade the accounts. It is also forbidden both to gather in-game resources for sale outside the virtual world and to perform in-game services (power-leveling) in exchange for real payment.[180]

Cracking down on illegal real money trade is difficult. It appears that RMT operations will continue to flourish because of the increasing demand for virtual items and relatively low risk. A common method of combating RMT operations is to limit the trade of several rare or unique items by "binding" them to the avatars who initially acquired them. These "bound" items cannot be transferred to other avatars. The virtual world *Kaneva* has a two-tiered currency system in which one currency can be transferred to other avatars while the other cannot.[181] Blizzard has been trying to crack down on the illegal market by both punishing dishonest players and closing distribution channels. In January, 2007, eBay began removing all virtual WoW item listings. The sale of such items is now prohibited and anyone violating this policy can find his account limited or suspended. EBay's policy is that anyone selling an item must be the owner of the underlying intellectual property. Since it is unclear who exactly owns a virtual item, like a WoW weapon or gold, eBay decided that it would no longer allow the sale of any of those items.[182]

Assessing the scope of RMT is difficult. Edward Castronova was the first economist to study real money trade of game assets. He estimated the size of the market to be USD 5 million in 2001 by measuring the daily volume of *EverQuest*-related RMT transactions.[183] In 2007, Lehtiniemi and Lehdonvirta estimated that the size of the global primary and secondary RMT market[184] had reached USD 2.1 billion, based on an aggregation of different sources. A Korean government agency estimated in 2008 that the value of secondary market trading might have exceeded one trillion KRW (USD 900 million) in Korea alone.[185]

Real money trade has never been a problem for the unstructured worlds, which were designed to allow commerce from the very beginning. *Second Life*

179 Reuveni, *supra* n. 135, p. 267.

180 *Word of Warcraft*, Terms of Use, no. 2, available at: http://us.blizzard.com/en-us/company/about/termsofuse.html.

181 Chung, *supra* n. 135, p. 111.

182 A guide to virtual items on eBay, available at: http://reviews.ebay.com/Buying-and-Selling-Virtual-Items-on-eBay?ugid=10000000004609906.

183 Castronova, *Virtual Worlds: A First-Hand Account of Market and Society on the Cyberian Frontier*, *supra* n. 22, at p. 31.

184 Primary market activity refers to sales of virtual goods directly from game publishers to players. Secondary market activity refers to sales by third parties.

185 For more estimates on RMT market, *see* Lehdonvirta & Ernkvist, *supra* n. 5, at p. 10 et seq.

has never banned sales of virtual items or currency for real money. To facilitate the exchange of Lindens into USD, the world operator established a currency trading website, the LindeX Exchange. The money traded on LindeX is used by Linden Lab to create economic statistics and to judge if the value of the Linden Dollar is inflated or deflated. When buying and selling Linden Dollars through LindeX, residents are not trading directly with Linden Lab but with other residents and, therefore, they can set currency prices and limits at their own discretion.

3.2.4.4 Examples of high-profile trade activity

As the popularity of trade in virtual items is growing, virtual worlds are more and more likely to attract not only players interested in killing dragons but also those seeking new economic opportunities seemingly less onerous than real labor. Virtual worlds have already become an income producing venue. Many people play online games and earn virtual items solely for economic reasons. Gold farmers and power levelers actually make a living by "farming" uncommon virtual objects and leveling other players' avatars from zero to the top possible level. In 2008, at least 400,000 people worldwide were employed as gold farmers, with the global trade worth at least USD 1 billion dollars.[186] The gross revenues of third-party gaming services industry were approximately USD 3 billion in 2009. As a comparison, coffee growers in the developing world earned (just) USD 5.5 billion for their labour.[187]

Some people have gained notoriety for generating substantial amounts of real income through the sale of virtual items and provision of virtual services. Anshe Chung and Julian Dibbel are the most prominent examples of people who turned their virtual activities into a full-time job. Julian Dibbel reported to the Internal Revenue Service (IRS) that his primary source of income was the acquisition, sale and exchange of imaginary goods and that he earned more from it, on a monthly basis, than he had ever earned as a professional writer. The IRS employees were very confused by this statement and could not give him a clear answer as to the tax treatment of these virtual earnings. They advised him to submit a private letter ruling request to obtain further information.[188] Dibbel, who finally managed to pay taxes on his virtual income, described his experiences with the tax authorities in a book *Play money or how I quit my job and made millions trading virtual loot*.

Anshe Chung, a virtual resident of *Second Life*, became the first "virtual millionaire", i.e. a person whose virtual items legally convertible into US currency were worth more than USD 1 million. She achieved her fortune by beginning with small-scale purchases of virtual real estate which she developed

186 Heeks, *supra* n. 104, at p. 64.
187 Lehdonvirta & Ernkvist , *supra* n. 5, at p. XI.
188 Dibbel, *supra* n. 2, at pp. 303-311.

with landscaping and architecturally themed buildings for rental and resale to other users. Her virtual operations led to a real spin-off company called Anshe Chung Studios, which develops virtual applications.[189] Anshe Chung is not the only one "virtual millionaire". In March 2009, it became known that there existed a few other *Second Life* entrepreneurs, whose profits exceed USD 1 million per year. Surprising was the fact that some of the top ten did not engage in real estate transactions but made their profits in virtual fashion- and event management business.[190]

The virtual world *Entropia Universe* is famous for its high-profile virtual transactions. British-born actor Jon Jacobs was included in the *2008 Guinness Book of Records* as well as the *2010 Guinness World Records Gamer's Edition* for owning the most expensive virtual item, the Asteroid Space Resort called Club Neverdie. Jacobs bought the asteroid, being the most valuable virtual item ever sold at that time, for USD 100,000 after taking out a mortgage on his real house. The virtual club located on the asteroid became the focal point of *Entropia's* virtual life and earned his owner USD 200,000 per year from people buying its services. In 2010, Jon Jacobs sold the Asteroid Space Resort to various other *Entropia Universe* participants for a total of USD 635,000. The purchase of the largest of share in the club for USD 335,000 has been the largest virtual transaction so far and beat the previous record set by an *Entropia* resident who bought the Crystal Palace Space Station for USD 330,000 in 2009.[191]

3.3 UNIVERSAL VIRTUAL CURRENCIES

The idea of a stateless decentralized currency has a long history. In 1976, the Nobel laureate Friedrich Hayek proposed a system of denationalized money shaped exclusively by market forces.[192] In his opinion, macroeconomic performance would be improved if state control of money could be wholly erased, leaving currencies to be created solely by private financial institutions. Hayek argued that traditional government-backed currencies are prone to a number of weaknesses, such as susceptibility to inflation and political corruption. Private currencies are more stable than traditional currencies because they do not share these weaknesses.

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189 Volanis, *supra* n. 23, at p. 340.

190 New World Notes, Top Second Life Entrepreneur Cashing Out USD 1.7 Million Yearly; Furnishing, Events Management Among Top Earners (24 Mar. 2009), available at: http://nwn.blogs.com/nwn/2009/03/million.html.

191 D. Bates, Internet estate agent sells virtual nightclub on an asteroid in online game for £400,000, (18 Nov. 2011), available at: www.dailymail.co.uk/sciencetech/article-1330552/Jon-Jacobs-sells-virtual-nightclub-Club-Neverdie-online-Entropia-game-400k.html.

192 F.A. Hayek, *Denationalization of Money: The Argument Refined*, 3rd ed. (IEA 1990).

Anonymous online payments between users are not a novelty either. In 1983, David Chaum described the concept of secure digital cash which could be spent in a manner that is untraceable by the bank or any other party.[193] He developed DigiCash – a digital currency that ultimately failed due to poor management and missed deals.[194] In 1998, Wei Dai wrote an article seeking to create a medium of exchange that avoided government involvement and the need for intermediaries in electronic transactions.[195]

In 2009, a person (or persons) operating under the pseudonym Satoshi Nakamoto created Bitcoin – a digital currency traded online via a peer-to-peer network, allowing its users to interact with one another anonymously and without a third-party intervention.[196] Nakamoto's decentralized currency was a response to the financial crisis, governments' reactions to it and to the role of banks and other payment intermediaries in mediating financial transactions. Bitcoin is not the first example of decentralized digital money but undoubtedly the most prominent so far.[197] The first bitcoins were transacted in January 2009 and by June 2011 there were 6.5 million bitcoins in circulation among an estimated 10,000 users.[198] In December 2013, bitcoins were traded at around USD 600 and their number exceeded 12 million.[199]

As the technical aspects of the Bitcoin system are complex and not easy to understand without a sound technical background, a comprehensive explanation of the technical mechanism of Bitcoin lies outside the scope of this thesis.[200] The following paragraphs contain a much simplified description of the Bitcoin operation. Since bitcoins are computer files, "spending" them simply means sending them from one user to another, just like sending an email via the Internet. Bitcoins are transferred from computer to computer via a system of cryptographic hashes and kept secure through public-private key cryptography. Each payment transaction is broadcast to the network. At certain intervals, all of the transactions during the preceding period are bundled together into a block, and these blocks are then linked to form a chain, creating a database of all approved transactions to date (which can be thought of as a giant shared accounting ledger). This public ledger records which

193 D. Chaum, *Blind signatures for untraceable payments* (1983), available at: www.hit.bme.hu/~buttyan/courses/BMEVIHIM219/2009/Chaum.BlindSigForPayment.1982.PDF

194 I. Grigg, *How DigiCash Blew Everything* (10 Feb. 1999), available at: http://cryptome.org/jya/digicrash.htm.

195 Wei Dai, *B-Money* (1998), available at: http://weidai.com/bmoney.txt.

196 Nakamoto, *supra* n. 26.

197 For an overview of academic papers on other decentralized virtual currency schemes, *see* Barber et al., *supra* n. 26. A similar peer-to-peer currency, also based on the Bitcoin protocol, is Litecoin, *see* https://litecoin.org/. Universal currencies can also be created be a private organization (for example, Ripple, *see* https://ripple.com/).

198 Reid & Harrigan, *supra* n. 26.

199 Bitcoin market statistics are available at: http://bitcoincharts.com.

200 For detailed explanations, *see* Nakamoto, *supra* n. 26 and https://en.bitcoin.it/wiki/FAQ#How_are_new_bitcoins_created.3F.

bitcoins have been spent or accepted, but it does not record any information on the parties' identity. Bitcoin has solved the double spending problem without resorting to a third-party intermediary: the database of transactions across the peer-to-peer network keeps a record of all transfers, so that the same bitcoin cannot be spent twice.

Within each block, there is a cryptographic puzzle which, when solved, validates the chain as a whole. Solving the puzzle is a computationally demanding process, and it requires large amounts of computing power. The computer that decodes a block receives the ability to create a fixed quantity of new bitcoins for itself as a reward (the process of solving the algorithms to generate new bitcoins is called "mining").[201] Mining is an arduous and time-consuming process. The typical office computer would have to run continuously for five to ten years to produce any bitcoins, and the cost of electricity would outweigh the value of the bitcoins generated.[202] New bitcoins are generated at a predictable rate. The mathematics of the Bitcoin system was so set up that it becomes progressively more difficult to "mine". The upper limit of bitcoins cannot exceed 21 million. Bitcoins are divisible to eight decimal places.

Users can store their currency in a "wallet" that takes the form of either software installed on their computer or a web-based account. There are three ways to obtain bitcoins. First, taxpayers can exchange traditional money for bitcoins. To accommodate growing demand, several Internet platforms offer exchanges between bitcoins and traditional currencies.[203] The price of bitcoins floats against the price of other currencies and is dependent on the supply and demand. Second, users can obtain bitcoins in exchange for (virtual or real) goods or services. Third, users can mine bitcoins by volunteering their computer's processing power to solve complicated computer algorithms.

The value of bitcoin shows great volatility. In October 2011, one bitcoin was worth approximately USD 2. In April 2013, the value of bitcoin exceeded USD 238. Later on, it slumped back to its pre-boom value of around USD 140, placing the value of bitcoins in circulation at almost USD 1.5 billion. To put that into perspective, the value of bitcoins circulating in April exceeded the value of the entire currency stock of over 30 countries, including Niger, Belize, and Malawi.[204] In March 2014, the bitcoin value was around USD 630.[205]

Bitcoin is distinct from community-related currencies as the popularity of the latter is linked to the use of the online environment and limited by their

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201 For the software and hardware requirements of Bitcoin mining, *see* https://en.bitcoin.it/wiki/Mining.

202 N.A. Plassars, *Regulating Digital Currencies: Bringing Bitcoin within the Reach of the IMF*, 14 Chicago Journal of International Law 377, p. 386 (2013).

203 Until its collapse in February 2014, Mt. Gox was the most popular exchange platform. In 2013, it handled 70% of all bitcoin transactions.

204 N.A. Plassars, *supra* n. 202, at p. 392.

205 *See* http://bitcoincharts.com.

utility to other players. In contrast, bitcoins can be used to make payments to anyone anywhere in the world. Currently, a large number of online sellers accept payments in Bitcoin.[206] In November 2013, the University of Nicosia in Cyprus decided to accept Bitcoin for payment of tuition fees for certain master programmes.[207]

Virtual decentralized money offers some substantial advantages over traditional paper-based currencies. A remarkable property of Bitcoin is that it provides no support for identity management and authentication of parties who act as payers, payees and miners.[208] All parties preserve their anonymity in transactions (some think of Bitcoin as "personal offshore bank"). For this reason, Bitcoin has also attracted those hoping to buy illegal goods and services online. Bitcoin became associated with the website Silk Road, a "digital black market" accessible only through the anonymized browsing service.[209] However, the unfortunate fact that Bitcoin has been used for illegal transactions should not create a general pattern of discrimination against those who want to use Bitcoin for legitimate trade: there is hardly any financial system that would not have been used for illegal purposes.

Another advantage of the Bitcoin system is the lack of transaction fees associated with a fund transfer since transactions take place over a peer-to-peer network. Bitcoin keeps middlemen away not only from profiting from transaction fees but also from "invading" transaction privacy. Payment intermediaries can be extremely powerful and effectively shut down an organization by refusing to transfer funds to it. When accounts of those accepting donations for *WikiLeaks* were frozen by PayPal and other payment systems, Bitcoin soon became *WikiLeaks*' preferred donation mechanism.[210] Due to its low transaction costs, bitcoins could also be successfully used in the micropayment sector.

Another potential field of application for could be virtual world related commerce. World developers could integrate Bitcoin into the online environments instead of creating new forms of virtual currency. The fact that the world operator would not be the currency issuer would mean that individuals would

206 A list of places that accept bitcoins as means of payment is provided in: https://en.bitcoin.it/wiki/Trade.

207 P. Liljas, *University in Cyprus Becomes First to Accept Bitcoin Payments* (21 Nov. 2013), available at: http://world.time.com/2013/11/21/university-in-cyprus-becomes-first-to-accept-bitcoin-payments/.

208 The Bitcoin system is partially anonymous as anyone can see the trail of all transactions from all accounts. However, those accounts are not linked to individuals in any way.

209 Silk Road, an international anonymous online marketplace that operates as a Tor hidden service, uses Bitcoin as its exchange currency. In 2012, the total revenue made by all sellers from Silk Road's public listings was evaluated at USD 1.2 million per month. *See* N. Christin, *Travelling the Silk Road: A Measurement Analysis of a Large Anonymous Online Marketplace* (30 Nov. 2012), available at: http://arxiv.org/abs/1207.7139.

210 Maurer, Nelms, & Swartz, *supra* n. 28.

not have to worry about centralized and discretionary control by a central game authority.[211]

Despite the potential advantages of decentralized currencies, their widespread adoption faces a number of obstacles. The main one is uncertainty surrounding their operation and growth. People can easily download the Bitcoin application and start using virtual money although they do not fully understand how the system works and which risks they take. The lack of an underlying legal framework, unclear legal status and the possibility of a government crackdown pose additional problems. As digital currencies lack regulation or public oversight, they are subject to credit, liquidity and operational risks. Bitcoin transactions are irreversible and the system has no built-in anti-fraud capabilities, whereas credit card companies have invested millions of USD in protecting customers against fraud.

Cybersecurity is also a constant concern. A large-scale theft of bitcoins from many users could create a confidence crisis. Such theft could occur by a virus or trojan that installs itself on users' computers and sends the wallet file to the criminal who wrote the software. In June 2011, Mt. Gox was hacked: 25,000 coins worth somewhere between USD 375,000 and USD 500,000 were stolen. The hacker tried to sell them at once, causing the bitcoin price to drop from USD 17.50 to USD 0.01. Mt. Gox responded by freezing trading and rolling back all accounts and trades to a pre-hack state.[212] In February 2014, Mt. Gox closed its website and filed for bankruptcy protection in Japan after 850,000 bitcoins (approximately USD 450 million) belonging to customers and the company were stolen due to hacking into its computer system.[213]

Technology failures could also prevent individuals from transacting in bitcoins. Keeping bitcoins on one's computer can be as dangerous as keeping large sums of cash in one's physical wallet. Malware, system failures or human errors may cause an accidental loss of the wallet file which stores the private keys needed to spend the coins. If this happens, the person cannot use his bitcoins anymore and the coins turn into zombies.[214]

Confidence in Bitcoin might also collapse if the anonymity of the system is compromised. All bitcoin transactions are public, but are considered anonymous because nothing ties individuals to the transactions. It might be possible,

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211 However, the use of bitcoins would be inappropriate for certain categories of virtual worlds. For example, in *World of Warcraft*, players can earn virtual gold by accomplishing various in-game tasks: the in-game wealth should represent skill and time invested in the game rather than out-of-game wealth.

212 J. Mick, *Inside the Mega-Hack of Bitcoin: the Full Story* (19 June 2011), available at: www.dailytech.com/Inside+the+MegaHack+of+Bitcoin+the+Full+Story/article21942.htm.

213 BBC News, *Mt. Gox bitcoin exchange files for bankruptcy* (28 Feb. 2014), available at: http://www.bbc.com/news/technology-25233230.

214 Zombie coins are coins whose private key has been forgotten or destroyed. Such coins cannot be used any more, resulting in shrinkage of the money base. *See* Barber et al., *supra* n. 26, at p. 5.

using statistical techniques and some identified accounts, to undo the anonymity of the system. An attacker wishing to de-anonymize Bitcoin users will attempt to construct a one-to-many mapping between users and public-keys and associate information external to the system with the users.[215] Such unexpected and sudden exposure would obviously be detrimental to bitcoin's value.

Some put confidence in Bitcoin because they believe that Bitcoin has no central institution with discretionary authority. Although Bitcoin is decentralized and has no single point of failure, it is nevertheless susceptible to denial of service. Individuals with a majority of the computational power in the bitcoin mining network can effectively preclude any transaction from being processed.

Some scholars claim that decentralized currencies possess the traditional characteristics of tax havens: earnings are not subject to taxation and taxpayers' anonymity is maintained. It is possible that tax evaders who use bank accounts in tax-haven jurisdictions opt out of traditional tax havens in favour of cryptocurrencies.[216] Traditional anti-tax-evasion mechanisms cannot successfully address Bitcoin-based tax evasion since Bitcoin's operation is not dependent on the existence of a sovereign jurisdiction that could provide information. Given the growing popularity of decentralized currencies, tax evasion associated with them may become more common in the future.[217]

Finally, digital currencies face the problem of network externalities. The benefit of using a digital currency depends on the number of other people using it. As the value of Bitcoin is not pegged to any real currency and its exchange rate is determined solely by supply and demand in the market, the whole system could collapse if people try to get rid of their bitcoins and are not able to do so because of its illiquidity. As Bitcoin is susceptible to irrational bubbles, a loss of confidence may collapse demand relative to supply.

In December 2013, the European Banking Authority (EBA) issued a warning on a series of risks deriving from buying, holding or trading virtual currencies.[218] The EBA said that consumers are not protected through regulation when using virtual currencies as a means of payment and may be at risk of losing their money. It also added that there is no guarantee that currency values remain stable. Also, when using virtual currency for commercial transactions, consumers are not protected by any refund rights under EU law.

215 Reid & Harrigan, *supra* n. 26.
216 Marian, *supra* n. 30, at p. 39.
217 Id., at p. 43.
218 EBA, *EBA warns consumers on virtual currencies* (13 Dec. 2013), available at: www.eba.europa.eu/-/eba-warns-consumers-on-virtual-currencies.

3.4 CHARACTERIZATION AS MONEY IN THE ECONOMIC SENSE

Before investigating tax implications of virtual currency, it is necessary to determine its nature. Can virtual money be regarded as "money"? Can it be treated in the same way as EUR or USD? To answer those questions one must first have an idea of what constitutes money.

Monetary theory has not provided a universal definition of money yet; nor has it explained how money should be created – the concept of money has become quite important without having been properly defined. What may count as money for one observer need not qualify as money for another one. Although many definitions mention a set of common characteristics, they differ in the relative importance they assign to those features.

Economists consider money to be a flow of information.[219] They define money as an information system to value, record and track economic transactions; a system that permits certain quantities to circulate through the hands of a community of users for various purposes. Regardless of the form, money is traditionally associated with three different functions.[220] First, money is a medium of exchange (barter catalyst) used as an intermediary in trade to avoid the inconveniences of a barter system. Second, money provides a unit of account. It acts as a standard numerical unit for the measurement of value of goods and services to make different offerings on the market more comparable. However, to serve as an efficient unit of account, a currency must be more than decimal and readily divisible. It must provide a measure of relative worth that users can understand on a nearly intuitive level. Otherwise, users must expend time and effort to determine what the currency and its associated unit of account really mean. Moreover, a currency can serve as an effective unit of account only if users accept its legitimacy.[221] Third, currency serves as a store of value of current earnings for future spending. Non-circulating money can circulate in the future and that potential for future circulation represents wealth or value that an individual participant can take advantage of.

How do virtual currencies perform the three main monetary functions? Virtual currencies act as a medium of exchange, either among members of a particular virtual community (for example, Linden Dollar) or globally (for example, Bitcoin). Universal virtual currencies impose fewer transaction costs as they allow individuals to transact directly with one another without the need to pay exchange fees. However, given the limited number of venues accepting them, virtual money is still a weak barter catalyst.

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219 J. Philips, *Bytes of Cash: Banking, Computing and Personal Finance*, 1 First Monday Review 5 (1996).

220 ECB, *supra* n. 28, at p. 10; Bergstra & De Leeuw, *supra* n. 26; Macintosh, *supra* n. 25, at p. 756.

221 Macintosh, *supra* n. 25, at p. 758.

To serve as an efficient unit of account, a currency must meet three criteria: it must act as a numerical measurement unit, have legitimacy among its users and provide an almost intuitive measure of relative worth. Virtual currencies can be used to measure the value of goods and services on the market: they are numerical and divisible. Universal currencies derive their legitimacy among their users from the trust that the users place in the computer code (cryptographic algorithm). Users do not need to rely on a government, a bank or a payment intermediary which may follow their own interests. Gavin Andresen, a lead Bitcoin programmer, explains that the decentralization coded by the Bitcoin program is "more comforting than thinking that politicians or central bankers won't screw it up. I actually trust the wisdom of the crowds more".[222] Similar legitimacy cannot be assumed among users of community-related money. This money is produced by a private company and available for a relatively limited number of transactions. Users are aware that once a virtual world ceases to exist, its currency will become worthless. As regards the third element (measure of relative worth), it is questionable whether virtual currencies can be considered intrinsically and intuitively valuable. To determine how much virtual currencies are worth, users usually translate their value into value expressed in a familiar unit of account. By looking at the string of data, hardly anyone can identify its value. It is impossible to determine the value of particular goods in Bitcoin without knowing the bitcoin exchange rate at a particular time.[223]

When assessing a currency as a store of value, the key question is whether the currency is viewed as reliable and stable enough to operate effectively. Community-related currencies cannot serve as a store of value. As virtual constructs of limited scope, they are completely dependent on the private company issuing them. If a virtual world closes down, its virtual currency will become worthless. Traditional currencies are often accepted as stores of value because they are backed by governments, which gives them a sense of legitimacy and stability in the eyes of the users. But government backing is a double-edged sword: maintaining a stable currency is not the only economic goal of governments and central banks. They can freely print large amounts of money to cover deficits or for other purposes, for example, to redistribute income and wealth between creditors and debtors or as a means to reduce unemployment. In contrast, decentralized currencies are resistant to inflation and answer to market forces, rather than policies of governments and various interests they represent. As Bitcoin has no central authority, no one can decide to increase the money supply. The rate of new bitcoins introduced to the system is based on a public algorithm and, therefore, perfectly predictable.

222 Maurer, Nelms & Swartz, *supra* n. 28, at p. 274.

223 However, the German Federal Financial Supervisory Authority (*Bundesanstalt für Finanzdienstleistungsaufsicht*, BaFin) has recognized Bitcoin as a "unit of account". *See* BaFin, *supra* n. 42.

Thus, decentralized currencies' independence from direct political influence makes them a more stable store of value than traditional currencies. On the other hand, the question arises as to whether Bitcoin fulfills the "store of value" function in terms of being reliable and safe. At any moment regulators from various jurisdictions may take action against Bitcoin and its participants. At any moment the Bitcoin market may collapse due to changing sentiments among bitcoin users: a technically stronger decentralized currency may appear and degrade Bitcoin to a mere historic incident. And of course at any moment technical problems may bring Bitcoin down without any advance warnings. Given the enormous volatility of bitcoin, possible technical problems, the lack of oversight and legal uncertainty surrounding Bitcoin, it is questionable whether Bitcoin can be a reliable store of value. After all, storing wealth in any medium that is easily susceptible to collapse or price fluctuations is unwise.

To sum up, community-related currencies cannot be regarded as money in the economic sense since they do not serve as a unit of account and store of value. Due to their dependency on the issuer, their users cannot legitimately expect that the value accumulated in this type of virtual money can be saved and retrieved in the future. The contractual agreements entered into with the world operators confirm this interpretation. Universal currencies, like Bitcoin, have the potential to perform each of the monetary functions more efficiently than traditional currencies. They are more resistant to inflation and independent of direct political influence. However, at present, Bitcoin is still surrounded by significant legal and factual uncertainty, which questions its ability to store value. Due to its limited use and enormous volatility, it cannot serve as a unit of account (its value must be first translated into the value of a traditional currency). Time will tell whether Bitcoin will be reliable and stable enough to be regarded as money in the economic sense.[224]

3.5 Characterization as money in the legal sense

The previous section has established that at present neither Bitcoin nor community-related currencies can be regarded as money in the economic sense. However, Bitcoin has the potential to become economic money in the future. Should this happen, it will be necessary to determine whether Bitcoin could be treated as money in the legal sense. When law refers to the concept of money (for example, when it requires to remit monetary amounts to settle tax liabilities), it does not use the economic definition. For legal purposes, money has three additional features: legal tender status, central management

224 Sometimes the concept of "near-money" is used to refer to a system that satisfies so many characteristics of money that is a candidate for becoming money. Money is always a near-money. *See* Bergstra & De Leeuw, *supra* n. 26.

and a physical carrier (coins, banknotes).[225] This concept is referred to as "legal", "classical" or "traditional" money.

Legal money is debt created by national governments.[226] It has the legal tender status in a state since it is accepted for paying taxes in that state. It is universal in a geographical area and can be used for all investments and exchanges there (with the exception of transactions carried out on purpose with other monies). Legal money is a centrally controlled information system. Central management involves the central bank which controls the amount of money in circulation. Central control may not be a positive phenomenon: it creates a single point of failure, leading to nationwide crises when the decisions are not correct and encouraging extensive political struggle to use the central management to serve powerful interests.[227]

Due to its decentralized nature and lack of physical carrier, Bitcoin does not meet the necessary criteria of money in the legal sense. Although it is designed to act as a traditional currency (and maybe even replace it in the future), it cannot be treated as such.[228]

3.6 Characterization as electronic money

This section compares the concept of virtual currency and electronic money. As there is no universally accepted definition of electronic money, it is

225 *See*, for example, sec. 1-201 (24) of the Uniform Commercial Code, according to which money "means a medium of exchange currently authorized or adopted by a domestic or foreign government. The term includes a monetary unit of account established by an intergovernmental organization or by agreement between two or more countries". US Financial Crimes Enforcement Network regulations define currency for purposes of the Bank Secrecy Act (31 CFR sec. 1010.100(m)) as "the coin and paper money of the United States or of any other country that is designated as legal tender and that circulates and is customarily used and accepted as a medium of exchange in the country of issuance."

226 For example, article 1, section 8, clause 5 of the US Constitution delegates to Congress the power to coin money and to regulate the value thereof. In a press release about the conviction of the creator of Liberty Dollars, the Department of Justice stated that: "It is a violation of federal law … to create private coin or currency systems to compete with the official coinage and currency of the United States." *See* www.fbi.gov/charlotte/press-releases/2011/defendant-convicted-of-minting-his-own-currency

227 L.V. Orman, *Virtual Money in Electronic Markets and Communities*, sec. 1 (1996), available at: http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1621725.

228 *See also* Eckert, *supra* n. 30; Sorge & A. Krohn-Grimberghe, *supra* n. 26, at sec. 3. The same view is taken by the Dutch Ministry of Finance (*see supra* n. 41). In a letter of 10 April 2013 (answering the questions asked by a member of parliament), the Ministry of Finance explained that Bitcoin is different from traditional money since it lacks a central authority and price stability. The IRS classifies convertible virtual currency as property and not as currency (*see* IRS, Virtual Currency Guidance, *supra* n. 40). The tax authorities of Estonia (*see supra* n. 46), Finland (*see supra* n. 47), Denmark (*see supra* n. 45), Norway (*see supra* n. 43), Slovenia (*see supra* n. 48) and Australia (*see supra* n. 59) confirmed that Bitcoin is not a traditional currency.

necessary to look at various attempts to define this term and to identify their common characteristics.

According to the White Paper published by the US Treasury in 1996,[229] "electronic money" involves tokens of value expressed in digital form, in the same sense that a casino chip is a token of value expressed in a physical form. Electronic money may take a wide variety of forms, including credit cards, smart cards and online payment systems, such as PayPal. In general, electronic money exhibits the following characteristics: it is issued by an identifiable institution, permits its users to move funds electronically, relies upon advanced technology and requires "loading" from funds held within the financial system. The White Paper differentiates between accounted and unaccounted systems. In the former, the e-money issuer maintains a complete or partial audit trail of transitions and can identify the person to whom electronic money is issued as well as people and businesses receiving electronic money as it flows through the economy. In the latter, electronic money may operate much like paper currency, moving through the economy anonymously.

The Internal Revenue Service (IRS) considers electronic money to be a money substitute or an intangible equivalent of cash.[230] It uses this term interchangeably with "digital cash".[231]

The European Central Bank defines "electronic money" as "an electronic store of monetary value on a technical device that may be widely used for making payments to undertakings other than the issuer without necessarily involving bank accounts in the transaction, but acting as a prepaid bearer instrument".[232] It distinguishes electronic money from access products (they involve banks since payments are settled by means of transfers between bank accounts) and single-purpose electronic payment instruments (i.e. payments made for goods and services which the issuer is expected to deliver at a later stage, for example a pre-paid telephone card). Further, the European Central Bank divides electronic money products into hardware-based and software-based products, depending upon the storage device. In the case of hardware-based products, purchasing power resides in a device containing hardware-based security features (for example, a chip). In contrast, software-based products employ specialized software on a personal computer, allowing electronic value to be transferred via telecommunications networks.

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229 US Treasury, *Selected Tax Policy Implications of Global Electronic Commerce* (22 Nov. 1996).

230 *See*http://www.irs.gov/Businesses/Small-Businesses-&-Self-Employed/Cash-Intensive-Businesses-Audit-Techniques-Guide-Chapter-7.

231 In my view, although electronic money schemes have characteristics that give their user impression that electronic money is equivalent to cash, this similarity is an illusion. Describing electronic money as digital banknotes is deeply misleading. Unlike cash, electronic money requires the intervention of a third party; for example, when a credit card payment is made, the bank issuing the card and the credit card corporation play an essential role.

232 European Central Bank, *Issues Arising from the Emergence of Electronic Money*, ECB Monthly Bulletin (Nov. 2000).

In the European Union, electronic money is defined in article 2 of the Electronic Money Directive (2009/110) as monetary value as represented by a claim on the issuer, which is issued on receipt of funds for the purpose of making payment transactions and which is accepted by persons other than the issuer.[233] Article 11 of the Electronic Money Directive (2009/110) adds that "Member States shall ensure that, upon request by the electronic money holder, electronic money issuers redeem, at any moment and at par value, the monetary value of the electronic money held".

Although there is no generally accepted definition of electronic money, some general observations can be made. All the definitions rely the concept of an identifiable issuer and a link to the traditional monetary system. In contrast, in virtual currency schemes, the link between the electronic money and the traditional money is not preserved. Virtual funds are not expressed in the same unit of account (for example, USD, EUR), but in a different one (for example, Linden Dollars, Bitcoin).[234] Neither do virtual currency schemes require "loading" since virtual "coins" can also be mined by the users themselves. The link between virtual currency and currency with a legal tender status is not regulated by law, which might be problematic or costly when redeeming funds (if this is permitted). Finally, in decentralized currency schemes is it not possible to identify the issuer. Thus, virtual currencies cannot be regarded as electronic money.[235]

3.7 Characterization as securities or assets

Securities are subject to detailed regulations in many countries. Under section 77b of the US Code, a security is defined as, inter alia, any note, stock or investment contract.[236] A similar definition is used in other countries. Under section 2 of the German Securities Trading Act (*Wertpapierhandelsgesetz*), securities are shares, certificates representing shares, bonds, participation certificates, warrants and any other comparable instruments that can be traded on a market.

Virtual currencies do not confer a claim on any other entity. They lack the characteristics of a stock (an ownership position in a publicly-traded corporation), note (a creditor relationship with governmental body or a corporation) or investment contract (investment in a common enterprise with

233 Directive 2009/110/EC of the European Parliament and of the Council of 16 September 2009 on the Taking Up, Pursuit and Prudential Supervision of the Business of Electronic Money Institutions Amending Directives 2005/60/EC And 2006/48/EC and Repealing Directive 2000/46/EC (hereinafter: Electronic Money Directive (2009/110)).

234 ECB, *supra* n. 28, at sec. 2.2.

235 *See also* BaFin, *supra* n. 42; Sorge & Krohn-Grimberghe, *supra* n. 26, at sec. 3; and the Dutch Ministry of Finance (*see supra* n. 41).

236 Investment contracts are defined in: *SEC v. W.J. Howey Co.* 328 U.S. 293, 298–99 (1946).

the expectation of profits). Instead, they represent a fixed amount. Individuals who use Bitcoin are independent of one another, and there is no money-making business that seeks to raise money through investments.

Owning a bitcoin gives one the right to use the bitcoin in any way one sees fit. This is similar to the ownership of assets. The owner of an asset can sell or use his asset at his own discretion. Thus, a reasonable perspective on Bitcoin is to view it as a steadily evolving piece of software or an asset that can be held as a part of an investment portfolio, alongside traditional currencies and other commodities.[237]

3.8 CONCLUSIONS

Money has been affected by the technological developments and the widespread use of the Internet: the result is the emergence of virtual currencies. Originally, such currencies were limited to virtual worlds and used as a medium of exchange between avatars. Nowadays, they exist independently of any virtual environments, competing with real currencies. The culmination in the process of monetary decentralization was the creation of Bitcoin – a decentralized, peer-to-peer currency not controlled by any institution. The emergence of virtual money can be considered as a natural development: the monetary history traces a path from more to less tangible: from barter via precious metals, coins, paper money, checks and credit cards to purely digital value (strings of numbers and letters flashing across a computer screen).

This chapter first distinguished two types of virtual currency (community-related and universal) and provided their detailed description. Second, it examined whether those currency schemes can be regarded as: (1) money in the economic sense, (2) money in the legal sense (traditional money), and (3) electronic money. The conclusions are as follows. Although virtual currencies are designed to perform the same functions as traditional currencies, they cannot be subject to the same rules as EUR or USD due to their different characteristics. Community-related currencies cannot be even regarded as money in the economic sense as they do not fulfill the monetary function of storing value and serving as a unit of account. A decentralized currency scheme, like Bitcoin, could be regarded as money in the economic sense if concerns regarding its safety and reliability are removed and it obtains "intuitive" value.

237 In Germany, Bitcoin is recognized as a unit of account and therefore a financial instrument. *See* BaFin, *supra* n. 42 . In the Netherlands, the Ministry of Finance does not regard Bitcoin as a financial product (*see* Ministry of Finance, Letter of 10 April 2013, s*upra* n. 41). The IRS classifies convertible virtual currency as property (*see* IRS, Virtual Currency Guidance, *supra* n. 40). So does the Norwegian tax administration (*see supra* n. 43). The tax authorities of Estonia (*see supra* n. 46), Finland (*see supra* n. 47) and Slovenia (*see supra* n. 48) do not consider Bitcoin a security.

However, irrespective of that, Bitcoin does not meet the definition of money in the legal sense.

A study from the European Central Bank suggests that the use of virtual currencies is expected to grow in the future. The recent explosion in bitcoin value[238] demonstrates that more and more people are turning to Bitcoin despite the theoretical reasons for avoiding it. People seem to be losing confidence in traditional currencies. The recent financial crisis in Europe caused bitcoin prices to rise as worried citizens exchanged their government-backed EUR for bitcoins.

The popularity and survival of a virtual currency depends on the number of people using it: if only a few entrepreneurs accept virtual money, individuals have little incentive to use it; if few consumers use virtual money, an entrepreneur has little incentive to accept it. Thus, the biggest challenge of virtual currencies lies in convincing people to use them and merchants to accept them.

At this moment it cannot be said with absolute certainty whether Bitcoin has what it takes to become a serious candidate for a long-lived and stable currency or whether it is yet another transient fad. At any moment a technically stronger successor may appear and instantly degrade Bitcoin to a mere historic incident. And of course at any moment technical problems may bring Bitcoin down and without any advance warnings. However, if the future of electronic commerce entails an increasing use of virtual currencies, it is critical that our economic, political, and legal institutions are prepared to deal with them and to incorporate them into the existing legal framework. Recognizing the importance and nature of virtual currencies is the first step in understanding how to best plan for the future.

238 *See* www.bitcoinwatch.com/. The value of Bitcoin exceeded USD 600 in December 2013.