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Peer Production in the Internet and Unauthorized Copying of an Intellectual Property in the Bit-Torrent Network

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Abstract: *This paper deals with the phenomenon of peer production in the context of unauthorized copying of information goods. Acc. to Yochai Benkler, it is a form of production operation based on a community. It is widely applied in the Internet and consequently, such information goods as GNU/Linux and Wikipedia have been established. Although the peer production has promoted growth in importance of, among others, free software or an open source initiative, it is also related to unauthorized copying of an intellectual property commonly called Internet piracy. The huge scale of this phenomenon, which is nearly 24% of entire Internet traffic, must not be ignored. In the paper a hypothesis has been put forward that low efficiency of counteracting of intellectual property unauthorized copying results from that fact that, to a great extent, it is generated in a process of the peer production. In turn, the goal of the paper is verification of the thesis in the progress of considera-*

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tions regarding the nature of both the peer production and the unauthorized copying. A research field was limited to a P2P file exchange network based on a BitTorrent protocol.

Introduction

The peer production is frequently defined as an alternative to a traditional production process arranged within an organization (Benkler, 2006, p. 12). At this occasion, a series of factors is enumerated, which prove its unique nature and related with popularization of the Internet. The social nature of this type of production is emphasized since commitment of participants is voluntary and free, but also this type of production is socially desired. In such a context the peer production, when considered normatively, seems to be rated positively and products of it seem to be a counterweight for commercial products.

However, a problem occurs when a goal of participants of the peer production is not coherent with a general conviction on advantages from social initiatives which, e.g., gave birth to a GNU/Linux project. It should be emphasized that the goal of the peer production process depends on the needs of a group engaged into it. In turn, a need is, to a great extent, a mixture of subjective feeling of lack of something and norms binding in a particular society. A peer production product itself is assessed in utilitarian but also in ethical categories which cannot be avoided.

Although there have been no clear objections when it comes to the positive impact on a contemporary society of such initiatives as the aforementioned GNU/Linux project or Wikipedia, the issue of unauthorized copying of an intellectual property stirs a lot of controversies. No matter whether it concerns Internet piracy (Stryszowski & Scorpecci, 2009) or a transfer of content between Internet users, called private copying (Johnson, 1985), the scale of the phenomenon affects the form of the Internet to a great extent. Although statistics have showed the unfavorable phenomenon of breaching the intellectual property law, it is not considered in the context of peer production.

The research question in this paper refers to the impact of peer production on the extent of unauthorized copying in the Internet. To make it clear, it is formulated into the following one: *does low efficiency of counteraction of intellectual property unauthorized copying result from the fact that, to a great extent, it is generated in the process of peer production?* The hypothesis accepted in the paper is a positive answer to such a question, while the goal of the paper is verification of it on the grounds of considerations

regarding the essence of distribution of unauthorized digital copies of information goods on the Internet.

The research field within the framework of which the considerations will be conducted, is environment of Internet users focused on P2P networks based on the BitTorrent protocol. And even if this is just a part of transfer of information goods on the Internet, it constitutes a conclusive image of the universal essence of the phenomenon. The BitTorrent network is the largest carrier of unauthorized intellectual property, but every other form is based on a similar mechanism. Among the factors which make such forms different, is the possibility and extent of making money on unauthorized transfer by third persons, however, it is not the subject of this paper.

Research Methodology

The considerations in this paper were based, to a great extent, on literature on the subject-matter and secondary data. The train of thought, in the theoretical part, is usually characterized by a deductive nature where an argument is the output of research related to the peer production. In turn, the demonstrated facts are referred to the theory of the production process based on the community, and they are sorted on the basis of the goal of the paper. This part of the paper applies secondary data mainly regarding the unauthorized copying. The empirical part, based on an analysis of Internet websites, constitutes a consequence of the deductive course. The observations made are of deterministic nature and hence, they must get into the shape described in the theory part. The paper does not deal with falsification of the advanced thesis, but it would be possible if one proved empirically, on the basis of direct examinations, that a substantial part of unauthorized copies is produced as a result of a single party's initiative, instead of a society focused on the peer production process.

Essence of the Peer Production

The peer production is a concept based on the community theory. It is clearly emphasized by its author i.e. Yochai Benkler (2006, p. 62), who defines it to be: “a subset of commons-based production practices”. Even if one can look for a series of fields of human activities where the peer production can be obtained, the authors of the concept considered it in the context of relations between Internet users. Benkler (2002, p. 381) and Benkler and Helen Nissenbaum (2006, p. 394) point out that during the

process information and cultural goods are produced, as well as generally considered knowledge. In turn, the process itself takes place in a digital-network environment of information & communication networks.

Peer character of the human activity means equalization of rights of its participants, practically at every stage of it. In order to enable it, it is necessary to resign ownership rights (to the largest possible extent) to the value produced by oneself (Benkler, 2002, pp. 381-382; 2006, p. 62; Benkler & Nissenbaum, 2006, p. 394). Hence, a pool of mutual or no-one's resources appears (cf. Czetwertyński, 2013, pp. 23-32), which can be used by everyone who is interested in acc. to his/her will. This equality regards any person who is able to reach such resources whether or not such a person contributed to the production of the resources. It is a special case, since it has never taken place previously – Internet, as a carrier of peer products, liquidates the barriers in the access to digital resources originating from a common pool.

The peer production is based on two key rules and to enable its functioning, three conditions must be met. The first rule concerns decentralization of the production process, which results in full autonomy of the participants. The second rule is related to the mechanism of the process coordination based on signals and a social motivation. It distinguishes the peer production from the neoclassic model, where actions of particular employees are coordinated by a bureaucrat, and where stimuli are provided by a price mechanism (cf. Czetwertyński, 2012, p. 51).

To observe the rules, it is necessary to meet the three already mentioned conditions. Firstly, the production process must be divided into modules (components) in such a way that any participant can work on one selected by himself/herself, independently from others. Secondly, all modules must be relatively small. Thirdly, the system of modules integration must be cheap, or preferably, free (Benkler & Nissenbaum, 2006, pp. 400-401). The second condition needs to be explained more accurately. The relatively small size of the module relates to the level of details in such a way that a participant in the peer production is able to work on it, regardless of the impact from other participants. A too low detail level discourages from taking part in the production process, or disables it.

The consequences of thusly formed concept of the production process enable to establish the following conclusions: (1) participation in the peer production is voluntary and unpaid, (2) the effort required for working on a particular module is relatively small, (3) the integration process is as automatic as possible, or it takes place by itself as a peer production.

To illustrate the concept of peer production one can use one of the most recognizable products of it, which is Wikipedia. It is a project of free encyclopedia produced by volunteers only. It is based on “wiki” software which means “quickly”. It enables to coordinate employees, who work at the same time, and are called Wikipedians (Tapscott & Williams, 2006, pp. 71-77). If every term in Wikipedia was be considered as a separate module, and the website itself as a form of integration of the production process into the final product, it turns out it is possible to create an encyclopedia in the process of peer production. Wikipedians, working on a particular term, are autonomous, but their commitment is the result of their will to provide more details, or to adjust valid information. Quite frequently, such an initiative takes place when one is looking for information; a mistake or a discrepancy is adjusted on the *ad hoc basis*. The mechanism of matching particular terms is ensured by “wiki” software, while information correctness control takes place in the course of a constantly repeated process. If every participant had to develop, e.g. an entire section, and matching of all of the sections would require work meaning a publication of a new edition, it is doubtful anyone would make a decision to participate in for free, and that the content would be displayed for free as well. Obviously, this example omits a series of problems such as the necessity to maintain servers, organization of structures maintaining operation of the wiki software, or institutional solutions regarding use of an intellectual work of certain Wikipedians as well as authors of terms who are not related to Wikipedia. Apart from these factors, considering of which does not belong to the core of this paper, one may say that the example of Wikipedia enables to see how the peer production works in practice.

Summing up, the peer production is a type of social and economic production process. Its participants establish a product of the value which can be economically verified, but they do not get a remuneration for it. It results from giving up some rights to the intellectual property they establish, extending in this way the amount of digital resources belonging to the common pool.

Extent of Unauthorized Copying of Virtual Information Goods

Unauthorized copying of virtual information goods, popularly called Internet piracy, has become a common phenomenon on the global scale. Along with popularization of the Internet, it has transformed into a dominating form of an unofficial exchange of content which is intellectual property.

Unauthorized reproduction of the information goods is strictly related to the sector of intellectual property authors. It (unauthorized copying) was committed, among others, by Thomas Edison, who copied and disseminated works of the French pioneer of cinema – Georges Méliès, obviously without his consent. In turn, Edison himself was known for persecuting his competitors who broke patent rights when designing movie equipment. Hence, independent authors were establishing their own companies far away from Edison's company, in the area which is today's Hollywood (Solomon, 2011, p. 2).

Similarly, like 100 years ago, also today the ownership right is subject of disputes of economic, social and ethical nature. Subjective approach to the issue of the intellectual property in varied sub-cultures is the source of low authority of this right, contrary to the property of material goods. It can be observed clearly in the results of the analysis by David Price (2013, p. 3) from NetNames. In the area under investigation, including Northern America, Europe and region of Asia and Pacific, more than $\frac{1}{4}$ Internet users searched for unauthorized information goods intentionally. It means this phenomenon is not endemic, but common. Every fourth Internet user uses the Internet to find content he/she is interested in, and gets the content without an authorization of the person or entity having the rights to the content. Even more, such actions may result in criminal liability.

Moreover, taking the extent of popularization of the Internet in the Northern America, Europe and Australia into accounts, which equals approx. 70% of population, “weight” of the issue of the unauthorized copying affects significantly the entire society (Miniwatts Marketing Group, 2014). Nearly 24% of data transferred via the Internet in the afore-mentioned regions of the world is unauthorized copying of information goods (Price, 2013, p. 3). Generally, it corresponds to the number of Internet users who generate the traffic. A litmus paper of the trends of Internet piracy is a files exchange system called P2P¹. The biggest network is BitTorrent in the framework of which nearly 100% of exchanged files is unauthorized, hence, illegal and subject of legal sanctions (Price, 2013, p. 30).

Acc. to data of Sandvine Incorporated ULC (2014, p. 11, 19; 2013, p. 13, 23; 2012, pp. 26, 31), the BitTorrent network regularly comes within first ten networks in terms of Internet traffic. Record-breaking share took place in 2008 when, in the area of Northern America, this network generated nearly $\frac{1}{3}$ data traffic (mobile Internet traffic not included). Presently, this situation looks different depending on a region of the world. The Bit-

¹ *Peer-to-peer* – a communication model enabling elimination of servers as agents between particular users of virtual communication networks. It enables direct and simultaneous share of data among P2P networks users.

Torrent network is still very popular in Europe. In the first quarter of 2014 in a stationary (Internet) access, it generated traffic at the rate equal to 14,4%, which means it followed the HTTP protocol only and a stream video related to YouTube site. A year before, this value equaled 17.36%, and in 2012 it equaled 20.32%. In the region of Asia and Pacific these values were even higher. In 2012 it equaled 27.19% and in 2013 it equaled 21.66%, and in 2014 as much as 31.58%. Relatively lower data transfer of the BitTorrent network is observed in Northern America, where presently it does not exceed 5%. It results mostly from growing domination of the Netflix website, which is Internet provider of movies, tv shows etc. However, it should be mentioned that although the share of two-directional average transfer has been low, still the amount of sent data equals more than $\frac{1}{4}$. One may conclude that this is not BitTorrent which loses, but Netflix which attracts more and more clients. Even more, Netflix is available in the West only, while in Asia it is not available at all (Netflix Inc., 2013).

BitTorrent is presently the largest source of unauthorized information goods in the Internet, among others, because other forms such as *cyberlockers* constitute internal and closed systems. The BitTorrent network is of open nature and it is more universal. Just *torrents are required*. Torrents are published at Internet websites. Technological solutions of this site enable accurate monitoring of it. Hence, it was possible to determine the content transferred via the network in question. The largest share is held by digital information goods in the form of video files – more than $\frac{3}{4}$ of all the data. Less than 10% are music files and software, including computer games (Price, 2013, p. 29).

Summing up, one needs to conclude clearly that the issue of unauthorized intellectual property on the Internet is a time sign of the global village. It is a common phenomenon characterized by serious social & economic essence. Acc. to estimations of the analysts from Tru Optik Data Corp. (2014b) from 2014 to December 2014, the amount of non-performed revenues from unauthorized copying equaled \$ 625 billion. This value is greatly affected by the price of software, since it constitutes 80% of all potential revenues. It concerns such giants as Autodesk Inc., Adobe Systems Inc. and Microsoft Corp. (Tru Optik Data Corp., 2014a, pp. 10, 24). A very significant fact is that the software produced by the aforementioned companies is intended mostly for professionals (mainly Autodesk Inc. manufacturing software intended to support designing) which is at odds with the stereotype of a teenage pirate.

Torrents as an Example of the Peer production

Use of the BitTorrent network requires having a proper software and a file comprising information on the location of particular parts of an information product on the Internet. The file in question, called torrent, is not a content itself, but a form of a map which enables to get access to the information. The BitTorrent, as a P2P network protocol, requires cooperation between two equal partners (users), who exchange particular fragments of a digital information product. Contrary to the traditional model of content downloading via the Internet, there is no client/server relation. In practice, on the one hand, it means there is no need to pay for servers keeping the data and, on the other hand, the pool of resources is maintained by the users themselves, who download and upload data for others. Every user is a node of a network where an information good is located. Nodes can hold an entire piece of information (product), or just a part of it. Every node may connect with one another (in practice, it connects with just a fraction of all of the nodes) in order to exchange particular fragments, till the moment of recording of the entire set (of information) in own resources. The main assumption is an exchange mechanism on the “something for something” basis. In other words, one may download a fragment when another fragment is made available. Making own files available can be a permanent process (Kuruse & Ross, 2010, pp. 194-196).

The aforementioned – simplified – description of the operation of the P2P network based on the BitTorrent protocol aimed to show simple rules of establishing of a kind of a society form. In order to use the network, there must be people ready to fill it with digital resources, and there must be a source of files (torrents) providing instructions on how to get (access) to the files. The peer production is of double nature in this case: (1) establishing of resources by their direct exchange and (2) establishing of Internet websites comprising torrents. In the first case, the participation in the peer production process is supervised by an algorithm of the BitTorrent protocol, but in the second case, this is a fully autonomic operation and hence, motivation & participation in it are voluntary.

Portals comprising torrents are established in the framework of the peer production process by a number of volunteers, who supply them with information on “access roads” to particular information goods in the P2P network. Before analysis of particular cases, one needs to mention that the costs of maintenance of the website itself are omitted herein. Usually, such costs are paid by users in the form of charity fees or registration fees, or they are paid by advertisers. In the last of the aforementioned cases, users

of a website in practice do not realize the necessity of maintaining the website and assuring its proper functioning in the field of technical issues. However, such issues do not constitute significant factors in terms of considerations herein, since the costs of functioning of such a website are small because it does not contain any information goods which torrents “direct” to – information goods are located in computers of particular users.

The largest one and the most popular website which collects torrents is The Pirate Bay. At the end of 2014, the number of them equaled nearly 7 M. At the same time, The Pirate Bay had nearly 6.8 million registered users and more than 50 M carried out an exchange of information goods by means of torrents located there (The Pirate Bay, 2014). Despite problems with the system of justice, the portal has been operating since 2003 with just a few short pauses. Although the founders of the website have been convicted by courts for business activity promoting breach of copyrights, it does not affect an interest in the peer production process (Ernesto, 2013). It would seem that legal problems and constant surveillance of the website should effectively discourage all of its users, but nothing like this has happened. Nevertheless, it should not be surprising if one took the rules of peer production into account. The share of each user is so minor, and the number of them is so large that, in practice, the responsibility is slight.

In Poland there also operate websites which collect torrents. Among them, the most influential are Torrenty.org and TNTtorret.info. In particular, the second one is a great research material because of its openness and clear rules. The website comprises series of entries including descriptions of movies, music works, electronic books (including audio books) etc. The website has 1.5 million users and nearly 900 thousand torrents (data from November 2014) (TNTtorrent.info, 2014a). There are two owners of the website, also 2 people deal with administration and there are 8 moderators (TNTtorrent.info, 2014c). Such a number of personnel is sufficient to efficiently manage 1.5 million of users, who enter more or less five hundred torrents daily.

The peer production, which requires satisfying of three essential conditions, in case of TNTtorrent.info looks as follows: (1) Every torrent, which is an entry, includes, apart from torrent files, a description of an information good, its format, and frequently – fragments of a work itself. In addition to the text of description, there are comments which regard the information good, e.g. its quality or functioning capabilities (in case of a software). (2) Every entry constitutes a separate module, and modules together constitute a database of torrents. The condition of proper size is met, since preparation of an entry can be carried out by a particular “partner” independently. They are also fully independent and hence, frequently there

are entries which are very similar. The last condition is (3) low cost of integration, which takes place fully automatically. An added entry becomes a part of a database, and it can be deleted by authorized users. If there is no such a necessity, a quality of an entry is verified in the system of comments included in an entry, intended to inform other users on the quality of a given torrent.

Among one thousand of the most active users, the average value of entries equals nearly 740, however, the median equals as much as 74. This difference results from the fact that in the first ten there are users who entered from 10 thousand to 60 thousand entries. In turn, the ten of the least active co-producers of the torrent database added less than 10 entries (TNTtorrent.info, 2014b). And even if most of users of the website and consequently – the BitTorrent network, has no significant contribution to the development of the resources by making new entries, in practice every user contributes to their maintenance.

In practice, it means that they contribute to the peer production process and they are also responsible for unauthorized copies. Hence, 1.5 million users of TNTTorrent.info, or 50 million partners identified by The Pirate Bay, are responsible for unauthorized copying. To some extent, the responsibility is proportional, since it concerns the same material, however, depending on the material itself or local regulations a user may be brought before a court or not. It is nearly impossible to reach every user in practice. Paul Levinson (2010, pp. 129-130) mentions the problem of execution of the intellectual property rights in relation to any operations on the Internet, and considers whether or not it possible to control copying of the intellectual property. In turn, Benjamin Klein *et al.* (2002, p. 205) prove that although copyrights are necessary in the contemporary world, they are not adjusted to the reality of today's virtual space.

Nevertheless, it is possible to find owners of a website, which took place in the case of The Pirate Bay. As an effect of a court action, four admins of the website were convicted to a fine and a one-year sentence (finally, the court's decisions were mitigated). However, it did not change the fact that the website has been still functioning (Goldberg & Larsson, 2014). The action did not result in the intended effect, since the website does not function due to admins, but users instead.

Conclusions

In the paper a hypothesis is demonstrated that low efficiency of counteraction of unauthorized copying of intellectual property results from the fact

that, to a great extent, it is generated in a process of peer production. Summing this paper up, one needs to pay attention to a few issues proving the hypothesis in question. Firstly, the peer production process may be freely applied to produce unauthorized copies, and authorized copies as well. No matter if one considers the development of websites with torrent files, or maintenance of unauthorized resources, a production based on the peer cooperation is a great mechanism promoting development of so called Internet piracy. Secondly, a social nature of this process means the users operate beyond conventional economic exchange term. Consequently, access to unauthorized resources is open and P2P type networks can grow up freely. Thirdly, a responsibility of particular users of the process is divided among tens of millions of users, which causes that counteracting such an operation is not possible. Taking into account the fact that 1/4 of Internet users, the number of which equals 2.8 billion, have had a contact with unauthorized copying (it concerns not only the BitTorrent network), it means 700 million people breached the intellectual property rights to some extent.

However, if development of unauthorized copies took place in a conventional way, in the form of a classic production, where it is possible to separate those who make available and those who purchase, the situation would be as follows. Firstly, the number of subjects which/who make goods available would be definitely smaller. Every user of the BitTorrent network downloads and sends content at the same time. He/she is the one who copies and allows to copy – which is the essence of the peer production process. In case of a centralized production, no one can copy from the one who makes goods available, since it would hamper his/her interest. In the case of peer production costs are incurred by everybody, and in the case of centralized production costs are incurred by the one who makes goods available only; hence, to function, one needs to prevent unauthorized copying of the content. A subject who functions illegally *de facto* operates as if it was legal, but its goods are illegal.

The second issue concerns the opportunity to counteract the centralized piracy. In the case of peer production, deletion of a particular user is like cutting a head of the hydra – it does not result in the intended effect. It should not be surprising, since subjects of the peer production process operate in a network and the network is characterized by the fact that deletion of a single node does not stop an exchange among other nodes – which is an essence of the Internet (Castells, 2010, pp. 47-48). Hence, if unauthorized copying had taken place as a traditional production process, then arresting of owners of The Pirate Bay website would have resulted in liquidation of the website. It took place in the case of e.g. Megaupload website,

since it collected resources at disks of a particular entity, which was Megaupload Ltd. (Yung, 2012).

The last issue is the share of benefits from unauthorized copies. In a centralized production there is a particular beneficiary who makes money from intellectual values, which generally do not belong to him/her. It is commonly recognized to be an inappropriate phenomenon (saying gently), not only legally, but also morally. The situation is different in the case when in the peer production process no one is paid. There are not generated direct tangible benefits from the unauthorized copying. Consequently, in most of legal systems this operation is belittled. It can be compared to mass exchange of books among colleagues or re-recording of cassettes by students in 90's. The problem is that the scale of the phenomenon is overwhelming and the quality of copied information goods does not differ from the "original" – authorized ones.

This paper ignores ethical and moral issues. Also, legal issues were not subject to considerations, since they are not the essence herein. However, one needs to pay attention to additional problems. Finally, it was not considered whether and who makes money from unauthorized copying in the BitTorrent networks. There are some circumstances supporting the advanced thesis that third parties gain profits from the peer production originating from a surplus of production. There is also an issue of an evident breach of the intellectual property rights by people who, in case of tangible products, behave absolutely legally. The issues in question, if they were not taken into account in this paper, make a basis for subsequent works.

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