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Published in:
Journal of Research in Interactive Marketing: Special Issue on Digital Piracy

DOI:
10.1108/17505931211282391

2012

Link to publication

Citation for published version (APA):
Larsson, S., Svensson, M., De Kaminski, M., Rönkkö, K., & Alkan Olsson, J. (2012). Law, Norms, Piracy and Online Anonymity – Practices of de-identification in the global file sharing community. *Journal of Research in Interactive Marketing: Special Issue on Digital Piracy*, *6*(4), 260-280.
https://doi.org/10.1108/17505931211282391

Total number of authors:
5

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The current issue and full text archive of this journal is available at
www.emeraldinsight.com/2040-7122.htm

Received 22 April 2012
Revised 28 May 2012,
1 June 2012,
28 June 2012
Accepted 6 July 2012

Law, norms, piracy and online anonymity

Practices of de-identification in the global file sharing community

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Abstract

Purpose – The purpose of this study is to understand more of online anonymity in the global file sharing community in the context of social norms and copyright law. The study describes the respondents in terms of use of VPN or similar service related to age, gender, geographical location, as well as analysing the correlation with file sharing frequencies.

Design/methodology/approach – This study is to a large extent descriptively collecting data through a web-based survey. This was carried out in collaboration with the BitTorrent tracker The Pirate Bay (TPB), allowing the authors to link the survey from the main logo of their site. In 72 hours the authors received over 75,000 responses, which gives the opportunity to compare use of anonymity services with factors of age, geographical region, file sharing frequency, etc.

Findings – Overall, 17.8 per cent of the respondents use a VPN or similar service (free or paid). A core of high frequency uploaders is more inclined to use VPN or similar services than the average file sharer. Online anonymity practices in the file sharing community are depending on how legal and social norms correlate (more enforcement means more anonymity).

Research limitations/implications – The web-based survey was in English and mainly attracted visitors on The Pirate Bays' web page. This means that it is likely that those who do not have the language skills necessary were excluded from the survey.

Practical implications – This study adds to the knowledge of anonymity practices online in terms of traceability and identification. This means that it shows some of the conditions for legal enforcement in a digital environment.

Social implications – This study adds to the knowledge of how the Internet is changing in terms of a polarization between stronger means of legally enforced identification and a growing awareness of how to be more untraceable.

Originality/value – The scale of the survey, with over 75,000 respondents from most parts of the world, has likely not been seen before on this topic. The descriptive study of anonymity practices in the global file sharing community is therefore likely unique.

Keywords Anonymity, VPN, Traceability, Piracy, Copyright, The Pirate Bay, File sharing, Enforcement, Social norms, Digital technology

Paper type Research paper

Journal of Research in Interactive Marketing
Vol. 6 No. 4, 2012
pp. 260-280
© Emerald Group Publishing Limited
2040-7122
DOI 10.1108/17505931211282391

1. Introduction

Identification is key to the enforcement of law. Likewise, to be able to choose when to be identified is key to the protection of privacy and the individual's integrity, in order to escape regimes of surveillance. These are two sides of a battle that are increasingly fought by digital means, corresponding to the greater extent to which our lives are connected to and mediated through a digital terrain. When it comes to the global file-sharing community, there has been no clear picture of its relation to issues of anonymity and online traceability. To the extent that the global file-sharing community relates to BitTorrent peer-to-peer file sharers, and to the extent that this community uses various techniques for being less traceable online, this study adds descriptively to the understanding of these matters. This study was conducted through a survey carried out in collaboration with the biggest BitTorrent tracker site, The Pirate Bay, which allowed us to link to our survey from the main logo of their site. We were allowed to alter the traditional pirate ship logo, replacing "The Pirate Bay" with "The Research Bay" logo, in order to draw attention to the survey. In 72 hours, we received over 75,000 responses. While attention to anonymity is a part of the survey, the main overall findings of the survey, containing a number of questions that are not relevant to anonymity, have been reported elsewhere (Svensson *et al.*, 2013).

The purpose of this study is to understand more about online anonymity in the global file-sharing community, especially in relation to legal and social norms. The reason is the key role that identification has for law enforcement, and conversely for privacy and individuals' integrity in avoiding surveillance and abuse of power. The descriptive part of the study involves a disaggregation of the data and comparison with a number of factors, such as age, geographical location, and gender. By relating the frequencies of anonymisation to the frequencies of file sharing, we can at least test one hypothesis regarding the motives of anonymity: that the illegality of a significant amount of file sharing drives the rationality of being less traceable and identifiable online (Larsson and Svensson, 2010; Larsson *et al.*, 2012), for example, to avoid legal repercussions. This must, at the same time, be understood in light of the fact that, in a digital society, the parts of copyright law regarding control over distribution and reproduction are very much. The data are analysed in terms of both social norms and the difference between law "in books" and law "in action", common in sociology of law. This purpose can be broken down into more specific questions:

RQ1. In what way is the use of VPNs or similar services related to age, geographical region, and gender?

RQ2. To what extent is the use of VPNs or similar services correlated to file-sharing frequency?

RQ3. How do the practices of online anonymity impact legal enforcement, and vice versa?

There are number of studies that analyse, measure, or discuss anonymity, encryption, or traceability in relation to copyright and file sharing. The focus of this article concerns not only knowledge of encryption, but also encryption for anonymity in relation to illegal file sharing, as well as illegal file sharing in terms of the theoretical field relating to social norms and legal enforcement in a digital environment.

2. Literature review

This study takes a somewhat narrow view on behaviour relating to online anonymity and unauthorised file sharing. In doing so, it is adding to a field of research relating to issues of copyright law in a digital society, one that has been described as one of "the most problematic areas at the intersection of new technologies and law" (Lundblad, 2007, p. 103; Larsson, 2011b, 2012). Economic research has approached the field of file sharing and "piracy" with a growing enthusiasm. This is sometimes done from the perspective of calculating the sums the entertainment industry loses on illegal file sharing (Gayer and Shy, 2006; Jaisingh, 2007; Waterman *et al.*, 2007) or on the linkage between changes in file sharing and changes in record sales (Liebowitz, 2006) and strategic concerns connected to this – a perspective often lacking any type of critical perception regarding the transferability of the legal concepts from regulating an analogue reality to regulating a digital one (Larsson, 2011b)[1]. There are also studies focussing on the will to pay (WTP) for music, trying to single out this aspect in the equation of piracy, such as Bellemare and Holmberg (2009).

Copyright has been critically analysed from a more normative and practical point of view by American scholars such as Boyle (2008), Lessig (2008), Litman (2001) and Patry (2009, 2011). There are a multitude of studies on file sharing from a number of perspectives, for example regarding the consequences of the "path dependence" of the legal development (Larsson, 2011a, c), its weak correspondence to social norms (Feldman and Nadler, 2006; Svensson and Larsson, 2012; Larsson, 2011b), how file sharing is justified (Andersson, 2010) and made mundane (Andersson, 2012). In short, the gap between law and norms has in this field been widely discussed (Altschuller and Benbunan-Fich, 2009; Feldman and Nadler, 2006, pp. 589-91).

However, this larger contemporary debate around copyright's role in a digital society need only be mentioned before we focus on the relevant aspects of this study. This literature review is hereafter divided into two main sections: the technological aspects of cryptography and online traceability in relation to privacy, and; the practices of anonymity and traceability in relation to online piracy and file sharing. More general aspects regarding law in relation to behaviour and social norms are further elaborated upon in the theoretical section.

Cryptography, online traceability, and privacy

Quite naturally, online anonymity can be used for both legitimate and illegitimate purposes, and anonymity can be "liberating, allowing online users to become less inhibited by social conventions and restraints". At the same time, the benefits of anonymity can be "dubious when it is used to avoid accountability for socially unruly behaviours and illegal activities" (Kim, 2010; Lessig, 2006, pp. 45-60; Rowland, 2009). Cryptography, in its digital version, has been depicted in terms of a "double-edged sword, working to de-identify whichever master it serves" (Larsson and Svensson, 2010, p. 80); it is therefore imperative to understand to implications for online traceability and identification in terms of both law enforcement as well as privacy.

It has been argued that much of the very character of the internet can be expressed in terms of anonymity and identification, and that many of the current debates regarding legal enforcement *vis-à-vis* integrity and privacy relate to these terms (Larsson *et al.*, 2012). Some of the literature on this field regards privacy issues related to online anonymity/pseudonymity and law (Froomkin, 2008; Rowland, 2009) or privacy issues

related to fighting terrorism (Rosenzweig, 2005). Many scholars have discussed the potential major implications for social interaction and regulation that a ban of online anonymity would lead to (Kang, 1998; Larsson and Svensson, 2010; Lasica, 2005; Lemley and Lessig, 2001; Reidenberg, 1998). It is not so long ago that encryption was seen as a tool not to be used by a broader public (Levy, 2001). Cryptography was in the US (and other countries) initially regulated as munitions, used primarily by soldiers and spies, and there were attempts to restrict its availability and use (Levy, 2001). Cryptography is now accepted as an everyday technology, for instance when it comes to banking or corporations sharing sensitive data (Lasica, 2005, p. 232), but is often seen as problematic when connected to online anonymity. The American Pew Research Center conducted a survey ("Future of the internet IV"), which gathered opinions from prominent scientists, business leaders, consultants, writers, and technology developers. This survey contained a section regarding online anonymity, and about 40 per cent of the surveyed experts thought that anonymous activities online would be sharply restrained by 2020 (Pew Research Center, 2010, p. 40). Anonymity on the internet, especially in relation to unauthorised file sharing, is described by Hinduja (2008, p. 392) as "[releasing] the participants from traditional constraints on their behaviour", which would imply that the impact of regulatory norms is clearly reduced.

Online anonymity tools, such as VPNs or similar services (for instance, proxy services), can be free or paid. A proxy server is a technical solution, but a kind of proxy can also be human or strategic. For instance, one should not underestimate the use of "sneakernets" – offline sharing through USB sticks, burned CDs, etc. There are a variety of technological services that work in slightly different ways, of which the most common are VPN services or proxies. VPN services in general result in a technically robust anonymity. Common VPN services provide users with the means of avoiding having their IP addresses connected to their offline identity, often in return for a subscription fee. An anonymity service, or anonymity server, is a server that provides the ability to send e-mail, visit web sites, or undertake other activities on the internet anonymously. All traffic between the user (client) and server (host) is encrypted to be indecipherable by third parties. Some issues of trust have developed between these encryption services and their users. For instance, because connectivity is not always maintained, these services are not always held to be completely reliable (Larsson and Svensson, 2010). Conversely, trust is also a vital part of the relation between the user and the VPN provider, since users put their data in the hands of the provider. With some services, users connect to the service supplier's servers with an encrypted VPN connection. The encrypted VPN "tunnel" between a user's computer and the internet service provider (ISP) server ensures that the ISP cannot determine what type of information is being sent to or from the user, which obviously prevents or at least impedes intrusion. The IP number that any external party can see leads to the service provider, not the client. Some services can be administered through an e-mail account, which makes it even harder to identify the user (Larsson and Svensson, 2010). Proxy services act as intermediaries and "privacy shields" between client computers and the rest of the internet. Some of these services can be free and does not necessarily have to encrypt the actual traffic. They deal with the aspect of where the traffic is directed from, in order to avoid tracking the origin. More advanced systems like the Tor network are good examples of this, making the location of the user harder to track but not by default encrypting the generated traffic. Of course, the actual traffic could be encrypted as well by using a more complex set of different tools and services.

Anonymity and online piracy

Media researcher Jonas Andersson argues encrypted anonymity has been used as a "rhetorical manoeuvre by interested actors (such as the Pirate Party and associates) to project fears of an even less overseeable sharing, impervious to regulation" (Andersson, 2010, pp. 137-8). However, Andersson continues, the encryption and anonymisation is projected to operate ubiquitously in the background, and "[t]his scenario has in fact been referred to in many of the technical discourses (on blogs and forums) as a more or less "given" next step, at least if the current legal crackdowns continue" (Andersson, 2010, p. 138). In a Swedish study (Larsson and Svensson, 2010), the use of anonymity services in relation to file-sharing frequencies was measured before and after the implementation of the EU copyright enforcement directive IPRED (Intellectual Property Enforcement Directive 2004/48/EC). The results indicated that unauthorized file sharing of copyrighted content was at least one reason for seeking stronger anonymity online. The increase after the implementation of the directive was significant for high-frequency file sharers, but the study also concluded that these results should be seen in a broad perspective of law in relation to social norms, due to the tendentious state of part of the copyright complex in a digital environment[2]. The fact that social norms regarding the parts of copyright law that seek to hinder unrestricted sharing of copyrighted content online have very weak support (Svensson and Larsson, 2012) may lead to unanticipated consequences of any increased enforcement of the law. One such consequence of IPRED enforcement was an increased use of encryption online, a result that was counterproductive not only to the specific law on copyright enforcement but also to other type of law enforcement (Larsson and Svensson, 2010). These social norms can be contrasted with the development of legislation on an international level. The trend of more and stronger copyright enforcement can be put on one side (Larsson, 2011a, c), and increasingly permissive online social norms on the other (Larsson, 2011b; Svensson and Larsson, 2012, 2009). It has been suggested that file-sharing patterns change and lead to a specialisation or "professionalisation" in the file-sharing community (Svensson *et al.*, 2013). Larsson and Svensson (2010) propose a connection between the increased use of anonymity services and increased file-sharing frequency, but receive no support from Hinduja (2008). Hinduja (2008, p. 396) stresses that "no significant increase in software piracy participation could be explained by knowledge of [. . .] anonymity". Hinduja's perspective is however different. Anonymity may not be a driver for illegal file sharing, but illegal file sharing may be a driver for anonymity, as suggested by the Larsson and Svensson (2010) study. This connection is also supported by a recent follow-up study by the same researchers (Larsson *et al.*, 2012), which found an interesting increase in use of anonymity in those that share files less frequently. This indicates that, at least in Sweden, there is an increased awareness among younger individuals regarding some sort of need to be less traceable online.

In a recent survey study by Karaganis *et al.* (2012), internet users were asked about appropriate penalties for unauthorized file sharing, and the results suggests that there is broad support for minor fines or warnings rather than jail time or disconnection from the internet. This study also covers countermeasures from internet users involved in unauthorized file sharing showing that 20 per cent of the respondents aged 18-29 in their study make "special efforts to encrypt [their] Internet traffic" and 7 per cent also use tools to hide their IP addresses online, in a survey study in which 70 per cent of the 18-29 year olds claim to have been involved in unauthorized file sharing. Woo (2006, p. 964)

concludes that the self-solutions of internet users, including network anonymisation techniques, tend to be a common and perceived "practical approach to ensure the least amount of network anonymity and privacy needed for personal autonomy". Also, an experience of being forced to a higher degree of anonymity may cause the users engaged in unauthorized file sharing to turn to underground piracy, as Beekhuyzen (2009, p. 204) states, forcing them "under the radar of law enforcement" by "employing methods that encrypt all traded digital content and communications so they are not detectable by those tracking illegal file-sharing activities" (Beekhuyzen *et al.*, 2011, p. 701), a finding supported by Larsson and Svensson (2010).

3. Theoretical framework

The research model utilized in this project is built on the norm perspective developed within sociology of law. Hence, the basic challenge lies in understanding relations and interdependencies between legal and social norms (compare Aubert, 1972, p. 13; Mathiesen, 1973, p. 10; Hydén, 1978, p. 26; Stjernquist and Widerberg, 1989, p. 7). The norm perspective is a way to understand legitimacy or its absence in relation to law. For example, there is a risk that if a law prohibits behaviours that are widely common, it may lack legitimacy or credibility on a broad scale (Feldman and Nadler, 2006, p. 590; Polinsky and Shavell, 2000; Hamilton and Rytina, 1980). Throughout the last century, the concept of norms has maintained a central position within the behavioural, social, and legal sciences (Ajzen, 2005; Bicchieri, 2006; Coleman, 1994; Hetcher and Opp, 2001; Homans and Sigeman, 1969; Kelsen, 1967; Lewis, 2002; Posner, 2007; Pound, 1996; Ross, 2002; Sugden, 2005; Sumner, 1906). Subsequently, sociology of law has created a norm concept that adopts influences from these three academic fields (Svensson, 2008; Hydén and Svensson, 2008; Baier and Svensson, 2009; Larsson, 2011b; Leo, 2010; Naujekaite, 2011; Svensson and Larsson, 2009, 2012; Urinboyev, 2011). As a result, the socio-legal concept of norms acknowledges three essential attributes that define the nature of norms. All types of norms (e.g. social, legal, etc.) have two ontological attributes and one behavioural (Svensson, 2013). Accordingly, norms are:

(1) imperatives (the ought-dimension of the norm; ontological);

(2) social facts (the is-dimension of the norm; ontological); and

(3) beliefs (the psychological dimension of the norm; behavioural).

The first essential attribute (the ought-dimension) is best represented by the positivistic legal science where norms (and law) are considered to be essentially "ought" statements (normativities) that should be studied deductively (Kelsen, 1967). The second essential attribute (the is-dimension) is tied to sociology and structural functionalism that argues that norms (social facts) should be considered as things/data that can be studied empirically (Durkheim, 1982) and inductively. These two dimensions (ought and is) can be applied to both legal and social norms.

The "ought" and "is" of legal and social norms describe the most basic societal tensions that have been identified by scholars within the field of sociology of law. In law (legal norms), there is a tension between what often is referred to as "law in books" and "law in action", first described in those terms by Pound (1910). These terms could in many respects be translated to what in Figure 1 is found in the normative and the factual dimension of legal norms, respectively. This perspective emphasises that a legal code by no means equals its intended practice in its implementation. The social, economic,

and cultural context that the law addresses in practice will also shape, contribute to, and explain its outcome[3]. In society (social norms), there is a tension between the normative and factual dimensions as well. This tension (e.g. deviance) has been discussed and analysed by scholars like Merton (1936, 1949) in his strain theory and in his writings about manifest and latent functions and dysfunctions in society (Larsson and Svensson, 2010; Larsson *et al.*, 2012). Finally, there is a tension between legal and social norms that is of particular relevance in the case of copyright law and piracy. Many socio-legal scholars focus their studies on "the gap" between the law and the intentions of the policy makers on the one hand and behaviour and social norms on the other (Banakar, 2011; Nelken, 1981).

The third essential attribute of norms is that they are also beliefs; therefore, social psychology is needed in order to understand them fully. Following the logic of the theory of planned behaviour (TPB) within social psychology (Ajzen and Fishbein, 1980; Ajzen, 2005; Fishbein and Ajzen, 2009) norms can be understood as a belief in the form of the individual's understanding of the surrounding expectations regarding his or her own behaviour. This attribute must be considered in order to explain the connection between norms in "law and society" and human behaviour.

Robert C. Ellickson, a professor at Yale Law School, was one of the first legal scholars to fully recognize the importance of socially enforced norms. He states that "much of the glue of a society comes not from law enforcement, as the classicists would have it, but rather from the informal enforcement of social norms by acquaintances, bystanders, trading partners, and others", and "informal systems of external social control are far more important than law in many contexts, especially ones where interacting parties have a continuing relationship and little at stake" (Ellickson, 1998, p. 540). The social norms, likely along with a number of other factors such as the technological prerequisites for identification, targeted in this study, constitutes the regulability of the digital environment (Lessig, 2006). Additionally, Drobak (2006) claims that social norms guide people's actions and social interaction to a greater degree than does the law. Therefore, the concept of regulability is relevant to this article's discussion of copyright law and the "competing social norms" (Moohr, 2003) of file sharing that "moderate, extend, and undermine the effect of copyright law" (Schultz, 2006, p. 1). For example, Feldman and Nadler (2006) conducted an experimental study on the influence of law on social norms regarding file sharing of copyrighted content, which is a study similar to one by Svensson and Larsson (2012) that found exceptionally weak support for copyright law in corresponding social norms.

	The normative dimension	The factual dimension
Social norms	**"ought"**	**"is"**
Legal norms	**"ought"**	**"is"**

Source: Svensson (2013)

Figure 1.
The "ought" and "is" of social and legal norms

4. Methodology

There are many ways to share files. However, since the survey was run through the Pirate Bay site, the respondents were not simply file sharers but file sharers accustomed to peer-to-peer (P2P) sharing. Therefore, when asking questions related to file sharing, it is likely that the respondents referred to the BitTorrent way of sharing files more than the average file sharer, not to mention the average person. There were 75,901 respondents overall in the study; no study of this size has previously targeted the file-sharing community. Several articles will be written based on the data. This article focuses on the issue of anonymity online, the use of VPN services, and the will to be anonymous when file sharing.

The data was collected during three days in April 2011, in agreement with the Pirate Bay site and the company running the web-based survey tool. The Pirate Bay agreed to change the central logo to one that we had prepared, which meant replacing "The Pirate Bay" with "The Research Bay", with the logo being clickable and accompanied by an appeal to the visitors to take part in a survey. The survey was conducted in English and the questions from the survey that have been analysed in this article include:

- What is your age?
- What is your gender?
- Where do you live? (Continents/regions).
- How often do you use peer-to-peer file-sharing networks to download digital media? (Never/more than once a month/more than once a week/every day or almost every day).
- How often do you contribute to the file-sharing community by uploading new media files (not previously available on the network that you use)? (Never/more than once a month/more than once a week/every day or almost every day).
- When file sharing, do you use a VPN or similar service to protect your anonymity? (Yes, free service/yes, paid service/no, but I would like to be anonymous online/no, I do not care about anonymity/I do not know).

The present study is to some extent comparable to Swedish studies on the use of anonymity services (Larsson and Svensson, 2010; see also about repeat study reported in Larsson *et al.*, 2012) and social norms of copyright (Svensson and Larsson, 2012) before and after the implementation of IPRED. There are, however, at least two major differences between the study represented by this article and the aforementioned studies relevant to the implementation of IPRED in Sweden, as well as the follow-up: first, the IPRED studies were conducted at two different points in time, with a follow-up, giving the opportunity to see changes in levels over time, which is an opportunity this study does not offer. Second, the IPRED studies focussed approximately 1,000 Swedes between 15 and 25 years old, whereas this study is global, with over 75,000 respondents, albeit with a majority of the respondents from North America and Europe, and with no restrictions in terms of age. This means that the data of this study can convincingly speak for behaviour in the global file sharing community in a way that, to our knowledge, no previous study has done.

5. Findings

The number of respondents answering the main question related to anonymity was 67,473 and 17.8 per cent (8,805 + 3,235 out of 67,473) stating that they used a VPN

or similar service in order to protect their anonymity (Table I). Further, there is a clear indication among approximately half of the respondents that they are willing to become (more) anonymous online.

When it comes to the use of a VPN or similar service in relation to age, the share within the age groups that use a paid version clearly increases as the age of the respondents increases (Table II).

When it comes to anonymisation in relation to geographical location, we asked for regions but not countries, and the strong majority of the respondents are found in Europe and North America (Table III).

The data reveal that the amount of users of VPNs or similar services is the biggest in North America and Africa, followed by Asia (Table III).

If we focus on Europe, the data indicate that the users of VPNs or similar services (free or paid) are slightly more common among file sharers in Russia and Western Europe than the European average (Table IV). However, it is also evident that it is more common to use a paid service in Northern Europe (7.6 per cent) than in Europe as a whole (5.2 per cent), as opposed to Eastern Europe where the use of paid services is significantly lower (1.7 per cent) than the average.

Before we look at differences between sexes in use of VPNs or similar services, one should first remember that overall there is a very strong male majority of 93.8 per cent of the respondents in the survey (see Svensson *et al.*, 2013 for further analysis). When it

Table I.
When file sharing, do you use a VPN or similar service to protect your anonymity?

	Use of free service	Use of paid service	No but I would like to be anonymous online	No, I do not care about anonymity	I do not know	No response	Total number of respondents
Number of respondents	8,805	3,235	34,664	12,417	8,352	8,428	67,473
Percent of respondents	13.1	4.8	51.4	18.4	12.4		

Table II.
Age and use of VPN or similar service

	< 17	18-24	25-29	30-36	37-45	46-52	53-65	66 <
Free service	15.2% (1,506)	13.3% (3,901)	11.1% (1,430)	11.2% (891)	13.1% (549)	17.2% (258)	14.4% (185)	15.5% (66)
Paid service	3.8% (372)	3.9% (1,140)	4.9% (626)	5.9% (470)	7.8% (325)	8.4% (126)	8.5% (110)	14.8% (63)

Table III.
Use of anonymity service in relation to respondent's continent

	Africa	Asia	Europe	North America	Central or South America	Oceania	Total	No response
Number of respondents	1,189	5,354	40,344	20,413	2,994	3,508	73,802	2,099
Number of VPN or similar users from the continent	234 (19.7%)	968 (18.1%)	5,895 (14.6%)	3,977 (19.5%)	433 (14.5%)	506 (14.4%)	12,013	

	Northern Europe	Western Europe	Eastern Europe (not Russia)	Russia	Southern Europe	Total	No response
Free and paid							
Number of respondents using free or paid VPN or similar	2,355 (14.8% of 15,918)	2,050 (16.2% of 12,689)	904 (11.9% of 7,587)	191 (17.0% of 1,125)	375 (14.6% of 2,564)	5,875 (14.7% of 39,883)	20
Only paid service							
Number of respondents using paid VPN or similar	1,215 (7.6% of 15,918)	62 (4.9% of 12,689)	131 (1.7% of 7,587)	28 (2.5% of 1,125)	70 (2.7% of 2,564)	2,064 (5.2% of 39,883)	5

Table IV. Free or paid use of VPN or similar service by European file sharers, divided into regions

comes to the use of VPNs or similar services, the difference is not striking. A slightly higher number of females use a free VPN service, and a slightly higher number of females do not know if they do (Table V).

When looking at the frequency of downloads and use of anonymity services, the results are not particularly striking. Those that download more frequently seem to have more of a desire for future anonymity, and seem to be more knowledgeable about what it means, but the difference in actual use of anonymity services is not striking (Table VI).

When it comes to uploading of new material to the file-sharing community, the ones that upload more frequently are also more inclined to use some kind of anonymity service (Table VII). For example, of those that upload every day or almost every day,

	Male	Female	Overall
Yes, free service (%)	12.9	14.4	13.0
Yes, paid service (%)	4.8	4.9	4.8
No, but I would like to be anonymous online (%)	51.8	45.3	51.4
No, I do not care about anonymity (%)	18.8	12.9	18.4
I do not know (%)	11.7	22.6	12.4
Number of respondents	63,280	4,047	
No response	7,657	631	

Table V. Use of VPN or similar service related to gender

	Total	Never	More than once a month	More than once a week	Every day or almost every day
Free service (%)	13	16.8	13.8	12.3	12.3
Paid service (%)	4.8	5.1	4.1	4	6
No, but I would like to be more anonymous online (%)	51.4	36.5	53.2	54.4	50.4
No, I do not care about anonymity (%)	18.4	15.3	15.2	17.8	22.2
I do not know (%)	12.3	26.3	13.8	11.4	9.2
Respondents	67,274	4,767	18,818	20,492	23,197
No response	1,578	510	180	51	63

Table VI. Download frequency related to use of anonymity services

Table VII. Upload frequency related to use of anonymity services

	Total	Never	More than once a month	More than once a week	Every day or almost every day
Free service (%)	13	9.8	18.3	21.7	22.3
Paid service (%)	4.8	4.2	5.1	6.4	8.7
No, but I would like to be more anonymous online (%)	51.5	55.4	46.9	39.3	33.2
No, I do not care about anonymity (%)	18.4	17.9	19	19.2	22.3
I do not know (%)	12.3	12.7	10.6	13.3	13.5
Respondents	67,034	45,264	14,087	4,153	3,530
No response	804	510	180	51	63

31 per cent use either a free or paid version of anonymity services, compared to the average of 17.8 per cent (Table VII).

6. Analysis and discussion

The findings in this study have a clear descriptive side, mainly relating to the three research questions described in the introduction of the article. These will be dealt with initially in this analysis. However, with the purpose of understanding online anonymity in the global file-sharing community in terms of legal and social norms these descriptive findings are thereafter theorised and discussed in relation to the theoretical framework outlined above. Hence, the description of the file sharing community and this behaviour in relation to the theoretical framework is summarised below including both conclusions as well as main implications.

The study reveals that of the 67,473 respondents reached via The Pirate Bay web site that answered the question on anonymous practices, 17.8 per cent claimed they use "VPNs or similar services to protect their anonymity". This means that the overall use of anonymity services is higher among file sharers on TPB compared to young people in general (compare with Larsson and Svensson, 2010, p. 93; Larsson *et al.*, 2012). The numbers are in line with the findings in the Karaganis *et al.* (2012) study, in which 70 per cent of the 18-29 year olds claim to have been involved in unauthorized file sharing and 20 per cent of the respondents aged 18-29 make "special efforts to encrypt" their internet traffic.

*Age, geographical region and gender (*RQ1*)*

In terms of use of VPNs or similar services related to age, there is a clear tendency that as the age of the respondents increases the share within the age group that use a paid version also increases. This is likely connected to the financial costs of having a paid service being perceived as less of a problem for older age groups. However, it may also reflect the fact that older respondents may have more to lose in getting caught sharing files illegally. Online piracy is more common among younger age groups and would therefore likely be more normative; it is not perceived as strange to be a (BitTorrent) file sharer, and thus the fear of social stigma if caught violating copyright law is arguably not as strong among the young as it seems to be among older age groups.

In terms of geographical location, the paid version of VPNs or similar services was the most common in Northern Europe compared to the rest of Europe. Is this an expression of different regulatory regimes, different enforcement, or is it a combination

of monetary and media issues? For example, when IPRED was implemented in Sweden it was massively reported in national press and took part in a wave of interest including bloggers, politicians, and the rise of the Pirate Party, etc. (Larsson, 2011b; Larsson and Svensson, 2010; Svensson and Larsson, 2012). These expressions have been different in different countries and regions and may have lead to differences in, for example, the use of anonymity services. There was a relatively high use of VPNs or similar services in Africa and Asia. At the same time, the number of respondents from those areas was significantly lower than from Europe and North America. While conclusions must be drawn cautiously, this could, in the case of Africa, indicate the presence of a small, tech-savvy community that not only has access to enough bandwidth to download on a large-scale but also do not trust the governmental surveillance regimes. When it comes to Asia, there are likely other file-sharing communities that are much more popular than the communities forming around TPB.

*The core uploaders (*RQ2*)*

From the results of this study, it is especially interesting to interpret the role and behaviour of the "core uploaders". As noted above, Hinduja (2008, p. 396) has found that no significant increase in illegal file sharing could be explained by knowledge of anonymity. However, Hinduja's perspective is opposite to the perspective in this study. Anonymity may not be a driver for illegal file sharing, but illegal file sharing may be a driver for anonymity, as suggested by the Larsson and Svensson (2010) study, which is supported by the findings in this study when it comes to those who upload material. A core of high-frequency contributors to the BitTorrent community is more inclined than the average file sharer to use VPNs or similar services. This is in line with the results of a study of approximately 1,000 Swedish individuals aged 15-25 (Larsson and Svensson, 2010; Larsson *et al.*, 2012). In this Swedish study, the increased use of VPNs or similar services was seen as a possible indication of a structural professionalisation within the file-sharing community, a hypothesis that is further elaborated upon and empirically substantiated in Svensson *et al.* (2013). The increase in share of using VPNs or similar services amongst those who file share the most can be interpreted as a rational choice made in order to avoid legal action.

*Law enforcement and online traceability: the architecture aspect (*RQ3*)*

In a digital society, the perspective of a dynamic interplay between legal and social norms may be complemented with (at least) a discussion on what the coded architecture means for behavioural control and the development of social norms and practices. In 2008, Zittrain wrote:

> [. . .] [t]oday our conception of the Internet is still largely as a tool whose regulability is a function of its initial design, modified by the sum of vectors to rework it for control: as Lessig has put it, code is law, and commerce and government can work together to change the code (Zittrain, 2008, pp. 196-7).

However, per the socio-legal perspective of this article, legal and social norms function in parallel, both influencing behaviour in society. A specific implication of this line of argument means that without support in social norms, people tend to look for countermeasures to the legal burdens that are laid upon them – how to circumvent rather than comply with the law; which in the case of file sharing can mean the use of anonymity

services or sneakernets when sharing media "under the radar of law enforcement" (Beekhuyzen, 2009, p. 204; Woo, 2006).

When the internet was still in its adolescence, although publicly available in the 1990s, it was considered by many to be impossible to regulate. This was, for example, the clearly proposed conception in Barlow's (1996) paper "A declaration of the independence of cyberspace". The American law professor and copyright analyst Lawrence Lessig formulated a widely known critique of this cyber-anarchistic approach in terms of "code as law" (Lessig, 1999, 2006), arguing that the architecture itself is not free of values[4]. One of Lessig's (2006, p. 36) points is that even though the underlying protocol of the internet originally did not require identification in the sense that offline environments do, these "architectures of control" could be layered upon the underlying protocol, and, as a result, facilitate control.

The copyright trend in the last five to ten years teaches us that the internet can be regulated; it can be contained, its intermediaries held liable and its nodes placed under supervision (Larsson, 2011a, c). The grass-root reply to these top-down attempts of adding control to the internet is an increased use of encryption to avoid traceability and identification as well as avoiding visibility of what type of data that is flowing in the web. This could then be said that, while code may be law in terms of an architecture controlling behaviour, the legislator of this type of code is more decentralized, more autonomous, and depends on an interplay of protocol development (for instance, BitTorrent) and the practices of the user (for instance, the use of VPNs or similar services), which in turn expressed in terms of sociology of law, very likely depend on how legal and social norms correlate. After all, the increased use of encryption among today's file sharers has been compared to the necessity of hiding transactions in the US during Prohibition (Shirky, 2003; Altschuller and Benbunan-Fich, 2009).

A gap between legal and social norms in relation to copyright

Key parts of copyright law, globally regulated in a remarkably homogenous way, have lost credibility and legitimacy for large segments of society (Altschuller and Benbunan-Fich, 2009; Feldman and Nadler, 2006, pp. 589-91; Larsson, 2011b, c; Lessig, 2008; Patry, 2009, 2011; Svensson and Larsson, 2012; Tehranian, 2007; Wingrove *et al.*, 2010). This gives its enforcement the character of a battle between different interests. Legislators and copyright lobbyists increase or attempt to increase the liability of those handling the traffic, the ISPs, partly because they are easy targets for legislation. This could be compared to the study of Larsson *et al.* (2012), which studied the changes in use of anonymity services by approximately 1,000 Swedes aged 15-25 over the course of three years. Larsson *et al.* state that, in order to understand how anonymity fluctuates in relation to legal action, one must consider the social norms that relate to the given law such that, when de-anonymisation is forced by law, "this will only seem just and legitimate if this law is in compliance with the structures of social norms". If that is the case, "online trust" is not affected. However, if the law is not in line with social norms, "this de-anonymisation will likely have a negative effect on the status quo of the weaker forms of anonymity" (Larsson *et al.*, 2012). In a similar research setting, Svensson and Larsson (2012) measured the strength of copyright's social norms and concluded that they were exceptionally weak for the respondents in that study. This, in combination with the statements from Larsson *et al.* (2012), indicates that the levels of use of VPNs or similar services will increase in the future if the law remains weak in terms of social

norms and the enforcement and scope of the law continues to be strengthened and widened. This could be compared to the fact that more than half of the respondents in this study of the global file-sharing community, 51.5 per cent, do not use an anonymity service but claim to be willing to be more anonymous online. It can be an indication that when increased enforcement of copyright occurs, there will be a corresponding increase in measures taken to be less traceable and identifiable online. The result is likely a polarization in terms of stronger enforcement on the one side and stronger anonymisation on the other.

It would be of interest to see to what extent the illegality is an issue to the file sharers, and to what extent they perceive a need to justify the behaviour, even if the behaviour is supported by social norms. It would be of further interest to see to what extent the file sharers resort to the allegedly "unstoppable nature" of file-sharing, as Andersson (2010, 2012) has shown in an interview study, or to other modes of justification, such as piracy being "democratic" (Larsson and Andersson, 2013) as a justification for stronger anonymity.

7. Conclusions

This study is, to a large extent, descriptive of the use of VPNs or similar anonymity services in the global file-sharing community. By surveying over 75,000 individuals, in collaboration with the BitTorrent tracker The Pirate Bay, the study concludes that there is a noticeable practice of anonymisation within the file-sharing community. Of the 67,473 respondents The Pirate Bay survey answering the main question related to anonymity, 17.8 per cent claimed to use a VPN or similar service. The main conclusions include:

- Paid versions of VPNs or similar services are more common in Northern Europe compared to the rest of Europe.
- A smaller group of "core uploaders" use anonymity services to a greater extent than the average file sharer.
- Online anonymity in the file-sharing community can be seen as an active countermeasure against legal action that is perceived as illegitimate.
- There seems to be a widespread willingness within the file-sharing community to be more anonymous online.
- The findings indicate a professionalisation, a division of roles in the file-sharing community (core and average file sharer).
- Regulability of an area depends on the specific context; in this context, it is clear that the digital architecture, the code, is a type of regulator in the hands of those who control and use it.
- Implications from a legal point of view: stronger enforcement of contemporary copyright regulation will likely, in the current environment of social norms, lead to an increase in online anonymity and efforts made to be less traceable online.

The broad interest for anonymisation is, in this study, understood as a function of social norms in the grass-root file-sharing community, as a response to the on-going top-down copyright enforcement strategies. Users involved in file-sharing communities seem to find anonymity services as a countermeasure for an increase in enforced traceability and identification of online activities. Given the gap that has been shown to

exist between copyright law and social norms in this and other studies, there are likely (for the law) negative and unconsidered consequences of enforcement strategies. Legal enforcement of a copyright regulation that does not correspond with social norms leads to countermeasures, in this case an increased use of anonymity services, sprung from the social norms that are not in compliance with the law. Given the generativity of the technologies of online communication in networks, these countermeasures imply an increased diffusion and maybe, in the future, a diversification of techniques of online anonymisation. The foundations of law enforcement have changed with new technologies and the internet; at the same time, the internet has also changed the foundations of social life. We have only begun to see the implications of traceability in an online environment in terms of both law enforcement and privacy protection. Law enforcement and privacy protection are likely issues that will grow in importance and potentially create political conflict in the years to come, in line with the absolutely inevitable embeddedness of digital networks in almost all aspects of life: social, cultural, work-life, education, citizenship, government, business, etc. This study shows that the use of anonymisation services are different in different groups of internet users, depending on age as well as on national context, but more detailed information is necessary to be able to analyse the potential consequences of an increased polarisation between law enforcement and privacy protection.

It is therefore imperative to increase our understanding of the driving forces on both sides: how the dissemination of knowledge around privacy-enhancing techniques is happening in different online communities, what privacy protection relies on in terms of social control and norms; and what is or should be the role of law in a digital society, not at least in terms of an increasing trend of ISP-liability and retention of traffic data for crime fighting. The answers to these questions are of central importance to discussions of the future not only of the internet but of our whole society as well. The practices of identification in the online environment will at least to some extent describe the future of the internet as we know it, and ultimately the characteristics of a fundamental part of society.

Acknowledgements

The authors acknowledge the Cybernorms research group, Lund University Internet Institute and the admins of The Pirate Bay (whoever they are). The Cybernorms research group, affiliated with the Lund University Internet Institute (LUii), conducted the study. The research group consists of researchers from the Department of Sociology of Law at Lund University and is partly funded by the Swedish Knowledge Foundation. See www.cybernorms.net

Notes

1. For a greater overview of the research from this perspective, see Peitz and Waelbroeck (2006).
2. The ethics of file sharing is also discussed, for example, in Lysonski and Durvasula's (2008) study of 364 university students. One conclusion was that students did not see illegal file sharing as morally wrong.
3. The "law in action" perspective means focussing on law and its relationship to society, as "a tool to better understand law and its operations, to improve the science of law and legal education and to develop law as a more effective instrument of social engineering"

(Banakar, 2011, p. 6). For Pound, valid law consists of legal rules laid down by authorities, and the distinction between law in books and law in action served "to highlight the social nature of the legal process, a process which, once grasped sociologically, could be engineered to manufacture a tighter fit between law and the social reality it tried to regulate" (Banakar, 2011, p. 7).

4. That is, code – as setting up the very premises for how behaviour, identification, surveillance, and adjudication – in this sense is law (Lessig, 1999, 2006). One could here analogously speak of code norms, next to legal and social norms, mentioned in Larsson (2011b, p. 134).

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