

File-Sharing as Social Practice

Do-It-Yourself Access to Knowledge and its Relation to the Formal and Informal Market

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Abstract

Online sharing of files has become a significant socio-cultural mass practice, whether the works they contain are authorized or not or in the public domain. Because of the economic implications of the infringing uses of file-sharing it has also been turned into an important, if not the central topic in the political debate on copyright law and its enforcement.

The aim of the upcoming GPOPAT research project is threefold: to explore the social and cultural universe of file-sharing in Brazil, to develop and test tools and methods for empirically researching this universe and to develop a national and international interdisciplinary research network. The project is intended to lay the groundwork for a second research phase in which the tools and methods that were developed are applied in a comprehensive manner in Brazil and other countries by the partners in the network, so as to gain empirical and comparable insights into national and cross-border file-sharing activities.

The research project starts in the final phase of the current copyright law reform in Brazil. The bill is expected to contain a public licence that would legalize private non-commercial file-sharing in exchange for a levy on broadband Internet access. If the proposal gets passed into law, the research project will be able to accompany its implementation. GPOPAT would be uniquely positioned for closely studying, monitoring and, based on its empirical expertise in this field, advising public policy makers in, this historic event.

This paper presents the results of a preparatory literature review on the state of research primarily in economics and primarily on the effect of file-sharing on the market for recorded music.

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2 The Grupo de Pesquisa em Políticas Públicas para o Acesso à Informação (GPOPAT) at the Escola de Artes, Ciências e Humanidades (EACH) of the Universidade de São Paulo (USP) was set up in 2005 to pursue research on the effects of new technologies for the production, distribution and consumption of cultural and educational goods. The group is a Reference Centre for Policy Research and promotion of state and non-state policies on matters of copyrights and has been funded by the Brazilian Ministry of Culture and the Ford Foundation. GPOPAT is actively engaged in the ongoing copyright law reform in Brazil. In particular it is advocating for exceptions for science and education, term reduction and the legalization of file-sharing in exchange for a levy remuneration. <http://www.gpopai.usp.br/>

Introduction: A Changing Landscape

"Music is spiritual; the music business is not." (Van Morrison)

The production, distribution, marketing, consumption and re-use of creative works are changing rapidly. Since the mid-1990s, personal computers have turned into powerful machines for recording and editing, for perceiving and remixing of music, texts and audiovisual works. At the same time, the Internet became a generalized global information and communication infrastructure. Google, Napster, iTunes, YouTube, Gracenote, Facebook, The Pirate Bay, RapidShare and many other services on the Internet have been changing creative practices fundamentally and globally.

In the 20th century, the culture industries emerged as a few multinational media corporations and a growing number of small and mid-sized, so called independent companies. The music market came to be dominated by four major recording labels. Based on radio, TV and print media they organize the attention economy so as to meet their inherent requirements of economy of scale and to sell ever fewer superstars to an ever larger mass consumer market.³ In contrast, the indie labels produce the overwhelming majority of new albums. The 80:20 rule-of-thumb in culture industries in general also applies to the music industry. 80% of revenues are generated by 20% of albums. In other words, the majors are responsible for revenues while the indies are responsible for cultural diversity.

In the Internet age, these relations begin to change. The Arctic Monkeys are emblematic for this shift. The newcomer rock band from Sheffield gave away self-burned CDs at their concerts. These were file-shared among their fans who also set up a MySpace page for the band and created the first music videos. The entirely fan-based promotion led to sold-out concerts, acclaim by the music press and eventually the fastest selling debut album in the entire UK chart history.⁴ Empirical analyses indicate that the Arctic Monkeys are characteristic of a general shift in initiative from industry to artists and audiences, from recorded to live music and from mono-culture to diversity.⁵ While sales of CDs and downloads, concerts and merchandising continue to be important sources of revenues, new models of monetization are emerging.⁶ These include donation systems for ex ante funding of creative projects like Kickstarter.com⁷ and for ex post micro-payments like Flattr.com.⁸

The Internet has become an important marketing platform, with labels and artists regularly providing websites and pages in social networks like MySpace. Recommendation systems on sales platforms (Amazon, iTunes, LastFM's AudioScrobbler etc.) direct the attention of consumers to "similar" products. Labels are now sending promos to blogs as well. As the Arctic Monkey example indicates, promotion activities are now increasingly driven by fans who are writing reviews on their blogs, tweeting about new releases and concerts, creating original artwork, photographs, videos and re-mixes and sharing the music itself through P2P, file-hosting and newsgroups. Some file-sharing services provide indices for searching and browsing. Others, like file-hosting sites, are not directly searchable. Therefore links to the music files themselves are the means to promote access to them.

Next to strictly peer-to-peer word-of-mouth, new forms of promotion are emerging. An example is the indie film platform Vodo.net that has established a distribution coalition that includes the world's largest torrent trackers, indices, search engines and commentary sites (Mininova, The

3 Tschmuck 2010.

4 http://en.wikipedia.org/wiki/Arctic_Monkeys.

5 See "Preliminary findings on trends in the music industry" in P2P Research Review.

6 See Anderson 2009.

7 On Kickstarter, Diaspora, a project to develop a privacy aware open source social network has collected more than 200,000 US\$. Singer-songwriter Jenny Owen Youngs raised more than 28,000 US\$ for her new album. The video series Pioneer One so far received more than 23,000 US\$.

8 Flattr donations are so far utilized for online journalism like newspapers, blogs and podcasts. For the June 2020 results see: <http://carta.info/30061/>.

Pirate Bay, IsoHunt, MyBitTorrent and TorrentFreak) that have committed to promote the films published on Vodo.⁹

The Informal Market

Unauthorized reproduction of published works is as old as the first technology for mass-reproducing cultural artefacts, the Gutenberg press. It gave rise to copyright law, granting exclusive rights to authors, i.e. the right to exclude others from reproducing, distributing and adapting their works. Until the end of the 20th century, technologies for mass reproduction and distribution of works were investment goods available only to large economic actors and therefore copyright law regulated the relations between commercial entities.

This started to change when in the 1950s audio tape recorders for the first time allowed individuals to privately copy commercial recordings. Subsequently, photocopying machines, audio and video cassette recorders extended this possibility for making small-scale analogue copies. The ensuing private non-commercial copying was legalized starting from the invention of the private copying exception in the German copyright law reform of 1965. It also enabled an informal market of audio and video cassette copies of commercial works sold by street vendors, on flea markets or via mail-order advertised in classified ads in magazines.

The digital revolution affected both of these practices. Digital copies are loss-less, enabling unlimited generations of copies of identical quality. Moreover, new technologies like the MP3 compression format and peer-to-peer file-sharing significantly increased the ease and range of distribution of digital copies. Many artists like Arctic Monkeys and authors of free software welcome this re-distribution by users, increasingly expressly encouraging it by means of free licences (GPL, CC).

Industry on the other hand, sees these developments as a threat to its business models. It responded with civil and criminal law suits, so called consumer education campaigns and Digital Rights Management (DRM) technology. The major label's refusal to license their works to the online market without DRM encapsulation delayed this market until Apple launched its iTunes Music Store (applying a less restrictive "Digital Inconvenience Management" system¹⁰) in 2003, about ten years after the Internet turned into a mass medium and market-place. It took another four years and a number of public relations disasters¹¹ until the music majors acknowledged in 2007 that DRM is causing them more harm than good and they ceased to apply it.

The launch of Napster in June 1999 introduced peer-to-peer (P2P) file-sharing. For information technology specialists, P2P protocols like BitTorrent are simply efficient means for distributing large volumes of data to large numbers of requesters. A wide range of commercial, scientific and free culture projects are utilizing the advantages of this distribution technology. At the same time copyright infringements do occur on P2P, although their percentage versus legitimate uses is unknown.¹²

The music industry has targeted P2P as the single most important cause of the decline in recorded music sales. Its response consisted again of civil and criminal law suits, first against the providers of P2P file-sharing services and software and then against individual file-sharers,¹³ getting payment providers like credit card companies and PayPal to block the accounts of alleged

9 <http://vodo.net/share-vodo-films>

10 Apple's "FairPlay" allowed writing downloaded music to a DRM-free standard Red-Book audio CD from which a user by means of standard tools, including iTunes itself, could rip it to any desired format like Ogg or MP3.

Therefore, Richard Stallman called FairPlay "Digital Inconvenience Management" in contrast to the typical "Digital Restrictions Management" (in an interview with p2pnet, 6.2.2006, <http://www.p2pnet.net/story/7840>).

11 Like the Sony-BMG rootkit case of 2005.

12 E.g. the Deep Packet Inspection provider Ipoque simply claims that "the overwhelming proportion of exchanged content violates copyrights," but also reminds the reader that "Not only copyright infringers use P2P but also scientists share their research data this way." (Ipoque 2009: 3)

infringing file-sharing services, getting government agencies to seize the domain names of alleged infringing sites,¹⁴ efforts to strengthen the international framework for enforcement in multilateral¹⁵ and bilateral¹⁶ agreements and calls for stronger legislation. The latter is currently centred on the so called graduated response, popularly known as "three strikes and you're out": after two warnings Internet service providers (ISP) are legally required to ban file-sharers from using the Internet for up to one year. This strategy of recruiting the ISPs who are allegedly profiting from file-sharing¹⁷ was first suggested in 2005 by the association of the four global major music recording corporations, the International Federation of Phonographic Industries (IFPI, see IFPI 2010: 7). It was transposed into law first in France,¹⁸ then in South Korea and Taiwan and established in a settlement by industry agreement in Ireland. Its introduction is currently being discussed in New Zealand and the UK, and as part of the highly controversial multi-lateral Anti-Counterfeiting Trade Agreement (ACTA).¹⁹

These measures have failed to reduce file-sharing, nor have they brought revenues to authors and performing artists. The observable effects include an alienation of many constituents from consumers via artists to public prosecutors, a decrease in the user growth of public P2P networks, a growth of closed so called darknets,²⁰ file-hosting (RapidShare, MegaUpload etc.), sharing on Usenet newsgroups, through hard-disk copying in private or in large LAN parties and growing use of mobile devices for sharing.

At the same time, the extend of the damage claimed by industry is increasingly called into question. By not only looking at the products of the four market-dominating multinational recording corporations, but at revenues from recorded music, concerts and collectively managed royalties, a Swedish study showed that from 2000 to 2008, i.e. the period in which file-sharing proliferated, the music industry earnings remained stable (Johansson/Larsson 2009: 6). Even if one is ready to accept that there is some harm by copyright infringements, one would then, by the industry's own logic, expect it to cause a measurable decrease of artists' incentive to create and of exploiters' incentive to invest in new works.²¹ The opposite is the case: "The publication of new books rose by 66% over the 2002-2007 period. Since 2000, the annual release of new music albums has more than doubled, and worldwide feature film production is up by more than 30% since 2003." (Oberholzer-Gee/Strumpf 2009: 1 f., 23 f.)

13 By the end of 2008, in the USA alone the industry had brought suits against more than 35,000 file sharers (Oberholzer-Gee/Strumpf 2010: 10).

14 Craig Labovitz, Takedown, Arbor Networks Security Blog, 2.7.2010, <http://asert.arbornetworks.com/2010/07/takedown/>

15 E.g. the World Trade Organization's (WTO) Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS), which came into force in 1995 and the currently negotiated Anti-Counterfeiting Trade Agreement (ACTA).

16 I.e. Free Trade Agreements (FTA) that establish in third countries protection beyond that required in TRIPS.

17 "A decade's worth of music file-sharing and swiping has made clear that the people it hurts are the creators... and the people this reverse Robin Hooding benefits are rich service providers, whose swollen profits perfectly mirror the lost receipts of the music business." Bono, singer-songwriter, in the New York Times, January 2010 (IFPI 2010: 7)

18 French government resources on the Création et Internet law:

<http://www.culture.gouv.fr/culture/actualites/conferen/albanel/2008-06-18-Art-Creation-et-Internet.html>; for critical resources on the law see Quadrature du Net: <http://www.laquadrature.net/en/HADOPI>.

19 The public critique focussed first of all on the secrecy of the process. After growing civil society pressure, the first public draft of the ACTA text was released in April 2010 (Knowledge Ecology International, Consolidated ACTA text is released, without country positions, 21. April 2010, <http://keionline.org/node/831>).

20 Darknets and the future of P2P investigators, 5 March 2009, <http://arstechnica.com/tech-policy/news/2009/03/the-new-version-of-p2p.ars>

21 "Illegal file-sharing has also had a very significant, and sometimes disastrous, impact on investment in artists and local repertoire. With their revenues eroded by piracy, music companies have far less to plough back into local artist development." (IFPI 2010: 19) "To continue to invest in new artists, we have to tackle mass piracy." (3)

Brazil

Music is an important market for Brazil. It is responsible for 5% of GDP and 6% of employment in the formal labor market.²² The domestic market has the largest share of national repertoire after the market in the US and before that in Japan.

At the same time, IFPI regularly singles Brazil out as a haven of "piracy." In its 2004 annual report, IFPI called it one of the "perennial hot spots for piracy," at that time still in the form of optical discs, because of its low rate of Internet broadband penetration.²³ In 2008, the number of households with broadband access had grown to 12 million.²⁴ In 2010, IFPI reported: "In Brazil, music sales fell by more than 40 per cent between 2005 and 2009, with a disastrous impact on investment in local repertoire. In 2008 there were only 67 full priced local artist album releases by the five biggest music companies in Brazil – just one tenth of the number (625) a decade earlier. This has been particularly damaging in a market where 70 per cent of music consumed is domestic repertoire." (19)

There have been no legal enforcement actions against P2P file-sharers in Brazil. The only actions so far were directed at the provider of the P2P software K-Lite Nitro,²⁵ against the moderators of a sharing group with nearly one million members on Google's social network Orkut²⁶ and, most recently, against the operators of the site Brasil Séries, from which allegedly more than 800,000 unique visitors per month downloaded popular TV series.²⁷ For all practical matters, downloaders and small-scale uploaders in Brazil are using file-sharing as if it were legal.

And yet music sales increase. The Associação Brasileira de Produtores de Disco (ABPD²⁸), the Brazilian chapter of IFPI, reported that in 2008, year-on-year major label revenues rose by 6.5%, CDs sales by 4.9% and the digital Internet and mobile market by a staggering 79.1%.²⁹ In January 2010, at the same time when the IFPI released its report on the "disastrous impact" of file-sharing on the recording industry in Brazil, the CEOs of the companies that make up the Brazilian chapter of IFPI signalled optimism: "the worst is over."³⁰ IFPI itself points out that "Brazil is the biggest digital market in the region and saw the successful development of services including Nokia Comes With Music and Terra Sonora in 2009."³¹

22 Ferreira anuncia criação do Fundo Setorial de Música, O Estado, 14 de dezembro de 2009,

<http://www.estadao.com.br/noticias/arteelazer,ferreira-anuncia-criacao-do-fundo-setorial-de-musica,481648,0.htm>

23 http://www.zeropaid.com/news/4551/study_global_cd_piracy_trade_tops_45_billion/

24 Comunicado do Instituto de Pesquisa Econômica Aplicada – IPEA n. 46. Análise e recomendações para as políticas públicas de massificação de acesso à internet em banda larga, p.6,

http://agencia.ipea.gov.br/images/stories/PDFs/100426_comunicadodoipea_n_46.pdf

25 <http://torrentfreak.com/brazilian-court-bans-p2p-software-090918/> and

http://www.abmi.com.br/website/noticia_detalhe.asp?id_secao=13&id=640

26 <http://torrentfreak.com/spread-pirate-bay-torrents-via-facebook-090328/>

27 Polícia prende donos de site Brasil Séries, Info Online, Abril, 16.7.2010,

<http://info.abril.com.br/noticias/mercado/policia-prende-donos-de-site-brasil-series-16072010-0.shl>

28 <http://www.abpd.org.br/>. ABPD publishes the only study on the music market in Brazil. The figures on physical products sold by the five major labels show an inconclusive dynamic. While there were years of an annual decline (by 23,40% in 2003 and 28,86% in 2006) there were also years when record sales rose (by 17,85% in 2004) or remained the same (in 2002 and 2008) (Tabela 2.9 in Relatório Música in GOPAI 2010). In 2008 digital distribution made up 12% of all recorded music sales in Brazil (Ibid. p. 36.).

29 "Otimismo não falta à Associação Brasileira de Produtores de Discos (ABPD)." (Ailton Magioli, Adeus ao pessimismo, Estado de Minas, 10.11.2009, http://www.abmi.com.br/website/noticia_detalhe.asp?id_secao=13&id=651.)

30 "Segundo os executivos do meio ouvidos pelo GLOBO, o pior passou, e o momento é de encontrar novos modelos para a música, que não parou. Marcelo Castello Branco, presidente da EMI (também responsável pela companhia na América do Sul e Central), garante que a fase negativa é passado." (Antônio Carlos Miguel, Indústria fonográfica em crise. Com o pé no freio, gravadoras procuram novos modelos para o negócio da música, Globo 30.01.2010, <http://oglobo.globo.com/cultura/mat/2010/01/29/com-pe-no-freio-gravadoras-procuram-novos-modelos-para-negocio-da-musica-915734730.asp>)

31 IFPI 2010: 11.

The independent labels according to their own global trade association MERLIN represent 80% of album releases and 30% of sales in the global market.³² The Brazilian chapter of MERLIN is the Associação Brasileira de Música Independente (ABMI),³³ which has 112 members out of the estimated 200 small to medium sized record labels in Brazil. ABMI estimates that in 2009 indie labels released 800 albums in the country. "The label Biscoito Fino alone, for example, last year, put 98 titles on the market, more than the total the four multinational companies EMI, Sony, Universal and Warner together released the same period. In good Portuguese, the majors are putting the foot the brake."³⁴ Indie labels are the ones who develop this cultural diversity and the new ways for paying the bill. And they are less affected by the CD sales slump, says Roberto Carvalho, president of ABMI and director of the Carioca indie-label Rob Digital. Carvalho sees problems not from file-sharing, but rather from the concentration in the retail sector which escalates competition for shelf space and the Zona Franca de Manaus which created an oligopoly of CD factories controlling the distribution and impeding diversity.³⁵

Because of this peculiar mix of factors, including the upcoming implementation of the new copyright law, that might legalize file-sharing, Brazil is especially interesting for researching the peer-to-peer distribution of creative works and its relation to the formal and informal market.

The State of Research

What do we know about online file-sharing? Given the central role it plays in industries' lobbying of governments and intergovernmental agencies for expanding legislation and enforcement, astonishingly little has been established so far with any degree of certainty.

Official Data

Official data on file-sharing do not exist. If at all, the copyright infringements occurring in file-sharing are addressed in the general framework of "counterfeiting and piracy." The 2008 OECD report "The Economic Impact of Counterfeiting and Piracy,"³⁶ while expressly no including "the significant volume of pirated digital products being distributed via the Internet," does call for actions "to keep the Internet from becoming an even more prominent distribution channel for counterfeit and pirated products." The report states that one of the key problems is that data have not been systematically collected or evaluated and, in many cases, assessments "rely excessively on fragmentary and anecdotal information; where data are lacking, unsubstantiated opinions are often treated as facts." The latter famously include the alleged 750,000 U.S. jobs lost to intellectual property infringements and the alleged US\$ 200 to 250 billion lost to the U.S. economy every year for the same reason. "And both, as far as an extended investigation by Ars Technica has been able to determine, are utterly bogus."³⁷

32 http://www.abmi.com.br/website/abmi.asp?id_secao=3&id=69

33 <http://www.abmi.com.br/>

34 O diretor executivo da ABMI, Jose Celso Guida, in: Antônio Carlos Miguel, Indústria fonográfica em crise. Com o pé no freio, gravadoras procuram novos modelos para o negócio da música, Globo 30.01.2010, <http://oglobo.globo.com/cultura/mat/2010/01/29/com-pe-no-freio-gravadoras-procuram-novos-modelos-para-negocio-da-musica-915734730.asp>

35 Ailton Magioli, Adeus ao pessimismo, Estado de Minas, 10.11.2009, http://www.abmi.com.br/website/noticia_detalhe.asp?id_secao=13&id=651

36 http://www.oecd.org/document/4/0,3343,en_2649_34173_40876868_1_1_1_1,00.html

37 Julian Sanchez, 750,000 lost jobs? The dodgy digits behind the war on piracy, Ars Technica, 8.10.2008, <http://arstechnica.com/tech-policy/news/2008/10/dodgy-digits-behind-the-war-on-piracy.ars>. Ars Technica's

In April 2010, the U.S. Government Accountability Office (GAO) issued a report on the "Efforts to Quantify the Economic Effects of Counterfeit and Pirated Goods."³⁸ It echoes the OECD report by acknowledging that no one knows what the scope or impact of "piracy" on the economy is. "We determined that the U.S. government did not systematically collect data and perform analysis on the impacts of counterfeiting and piracy on the U.S. economy and, based on our review of literature and interviews with experts, we concluded that it was not feasible to develop our own estimates or attempt to quantify the economic impact of counterfeiting and piracy on the U.S. economy." (GAO 2010: 2) Based on a similar analysis, the European Union in 2009 established an Observatory on Counterfeiting and Piracy³⁹ in order to improve the empirical evidence about the informal market.

Industry Research

Most of the numbers that do exist and that are regularly used as fact by government offices, academic researchers and the press, have been produced through research by the copyright industries themselves. Since the 1970s what Adrian Johns (2009: 498 ff.) calls "the intellectual property defence industry" has emerged, culminating in the linkage between the IIPA and US foreign trade policy. In a report on the preliminary findings of a four-year six-country study on "Media Piracy in Emerging Economies," project lead Joe Karaganis started to unravel this copyright industry-government complex, calling the IIPA "the research wing" and the United States Trade Representative (USTR) with its "Special 301" process "the policy wing." (Karaganis, 2/2010)

The International Intellectual Property Alliance (IIPA) was formed in 1984 by seven US industry associations, representing the sectors books, business and entertainment software, film and television and music publishing and recording, together over 1,900 U.S. companies and an estimated 18 million US jobs.⁴⁰ The IIPA describes itself as "a private sector coalition ... representing U.S. copyright-based industries in bilateral and multilateral efforts working to improve international protection and enforcement of copyrighted materials and open up foreign markets closed by piracy and other market access barriers."⁴¹

IIPA was established in light of the "Special 301" process that the USTR initiated in 1988. It is, as Karaganis explained, the framework of the US government for unilateral negotiations on legal protection and practical enforcement of "intellectual property" rights (IPR) with countries primarily outside the WTO. Where these protections are found not to meet the interests of the US copyright industries, the US government places countries in one of three categories: the "Section 306 Monitoring List," the "Watch List" or the "Priority Watch List," corresponding to increasing levels of pressure exerted on foreign governments in concert with domestic organizations of the same industries in these countries.⁴²

IIPA has established a global network for analysing copyright laws and enforcement regimes in over 80 countries. It works directly with national government and law enforcement agencies in order to ensure strong "enforcement, both in-law and in-practice, against the theft of intellectual

accusations were officially confirmed by the U.S. Government Accountability Office (GAO 2010: 9 f.).

38 Regular reports are required by the Prioritizing Resources and Organization for Intellectual Property Act of 2008 (PRO-IP Act).

39 http://ec.europa.eu/internal_market/iprenforcement/observatory/index_en.htm

40 Best known are Recording Industry Association of America (RIAA), the Motion Picture Association of America (MPAA) and the Business Software Alliance (BSA). See: <http://www.iipa.com>.

41 <http://www.iipa.com/aboutiipa.html>

42 The Office of the USTR puts this more politely: "The Special 301 Report provides a means for the United States to communicate its concerns about the need to protect and enforce IPR." (<http://www.ustr.gov/about-us/press-office/press-releases/2010/april/ustr-releases-2010-special-301-report-intellectual-p>) See also the section "Special 301" in GPOPAI (2010).

property."⁴³ As Karaganis points out: "Industries are so closely woven into the process that they control it, from identifying of suspected pirates to evidence collection to the funding of the raids to prosecution – there is no boundary anymore between public and private power." (Ibid.) Little if any boundary exists in the US domestic process either, where 85% of the IIPA recommendations are passed directly into the USTR report. Where there is a discrepancy, the USTR tends to go beyond the demands of the IIPA. In the 2010 Special 301 procedure, IIPA recommended "corrective actions" against 39 countries, while the USTR's Report highlights problems in 42 countries, including China, Russia and Canada. Brazil remained on the lower-level "Watch List." (USTR 2010: 29)

The evidentiary requirements of the Special 301 process, as Karaganis points out, led to significant industry investment in research on copyright infringements that did not exist before. Karaganis grants some value to the longitudinal records over 22 years in many countries, but also points out the problems: the credibility of the data and the transparency of the methods by which they are produced. The USTR does require information, but IIPA gives only a two-page sketch on their methodology.⁴⁴ Karaganis: "It's all a black box. Deliberately so."

That the "intellectual property defence industry" – outside the scientific norms of transparency, reproducibility and peer-review – produces an IPR discourse that directly informs a powerful government's actions vis a vis other countries, is obviously untenable. Mounting criticism from the countries at the receiving end, from civil society and the domestic press led the USTR in 2010 to open the Special 301 process for public comments⁴⁵ and to conduct a public hearing that included 23 witnesses, ranging from foreign governments to industry representatives to non-governmental organizations.⁴⁶

Academic Research

Independent academic research has started to address file-sharing soon after Napster introduced peer-to-peer technologies in 1999. The main body of research comes from two disciplines, computer science and economics. Computer science focusses on P2P architectures, distributed search strategies, P2P measuring and data mining (see e.g. Saroiu/Gummadi/Gribble 2002, Bhaduri/Das/Kargupta 2007, Aidouni/Latapy/Magnien 2008 and for a P2P computing bibliography see Wang 2007).

Some of the findings from a review of more than 80 economics studies (GPOPAI 2010) are summarized in the following sections. They show a great diversity of scopes, data, methods and findings, ranging from studies showing, unsurprisingly, that capital (as reflected in stock price responses) values enforcement and legislative actions as positive for the media industries (Goel et al. 2010) to those showing the positive social welfare balance of file-sharing (Huygen et al. 2009). Most studies focus on one media genre because it is evident that the usage practices, markets and demand structures vary greatly between software, games, books, music and movies. The oldest and largest body of research looks at recorded music and how it is affected by P2P file-sharing. There is no consensus, only one conclusion that all agree on: more empirical examination is needed.

Starting from the evidence presented in the first law suits over file-sharing⁴⁷ there have been two opposite hypotheses on its effect: Conventional wisdom makes one expect that unauthorized copying and distribution harms sales. The counter-hypothesis states that P2P file-sharing through

43 <http://www.iipa.com/aboutiipa.html>. Note the terminological shift from "piracy" to "theft."

44 <http://www.iipa.com/rbc/2010/2010SPEC301METHODOLOGY.pdf>

45 The 748 submissions are available at www.regulations.gov under docket number USTR-2010-0003:

<http://www.regulations.gov/search/Regs/home.html#searchResults?>

[Ne=11+8+8053+8098+8074+8066+8084+1&Ntt=USTR-2010-0003&Ntk=All&Ntx=mode+matchall&N=0](http://www.regulations.gov/search/Regs/home.html#searchResults?Ne=11+8+8053+8098+8074+8066+8084+1&Ntt=USTR-2010-0003&Ntk=All&Ntx=mode+matchall&N=0)

46 A transcript of the hearing is available here: http://www.ustr.gov/webfm_send/1726

47 *RIAA v. Napster*, 1999, and *A&M Records, Inc. v. Napster, Inc.*, 2000.

network⁴⁸ and discovery effects⁴⁹ positively impacts culture industries. A third possibility is that sharing is a largely separate cultural practice from buying and thus has no significant effect on sales at all. Most studies find a complex mix of all three dynamics: A significant number of sales were substituted by downloads, a significant number of downloads would never have been bought and a significant number were bought because of artists discovered through file-sharing. Thus all studies but one attempt to determine the net effect of these dynamics. The lone exception is Liebowitz (2008) who claims that file-sharing has not only caused the entire decline in record sales but also the failure of an extrapolated growth that should have occurred without it.

What has clearly emerged is that there are quite a number of different dynamics at work yielding a mixed result with respect to album sales. There is a likely positive result for the music industry as a whole through discovery effects and gains in concert and merchandising revenues, and a clearly positive effect on social welfare through improved market chances for non-star music, greater cultural diversity and increased consumer surplus.

While one might assume that the same general tendencies are at work in Brazil, even less is known about this major media market. There are no academic studies on online file-sharing in Brazil. Among the rare studies of physical media-based copyright infringement are the section on "Mercado Informal" in GPOPAI (2010) and the aforementioned study "Media Piracy in Emerging Economies." Conducted by the US Social Science Research Council (SSRC) under Karaganis, this study comprises research teams in Bolivia, India, Mexico, Russia, South Africa and in Brazil.⁵⁰ The Brazilian team at the Centre for Technology and Society (CTS) of the Fundação Getúlio Vargas (FGV) Law School and at the Instituto Overmundo presented its preliminary report entitled "Custos e benefícios do combate à pirataria no Brasil" to a closed meeting in Rio de Janeiro at the end of July 2010.⁵¹ The final report has been announced for October 2010. While it is too early to speculate on possible findings of the SSRC study, important insights are expected on the legal situation and on anti-piracy strategies of industry and government. What this project had not intended to do is empirical research on online file-sharing.

In short, while over the last ten years file-sharing has become a daily practice for millions of people, the universe of this practice is still a terra incognita. That the "intellectual property defence industry" dominates the copyright discourse and directly informs US governments actions is untenable, as this government has acknowledged by taking first steps to opening up its foreign policy process. Civil society is also heeding the call, with the prominent example of the Consumers International "IP Watchlist Report 2010" surveying copyright laws and enforcement practices in 34 countries on how they serve the public interest in fair and affordable access to educational and cultural materials.⁵² The scientific community as well has to come up to speed with its task of providing society and politics with a sound basis for the formation of the digital knowledge environment.

48 Network effects imply that the value of a good and therefore the willingness to pay for it rises with the installed base of users. This has been shown particularly for computer software but also music and movies profit from popularity, reputation and word-of-mouth effects that are enhanced by file-sharing.

49 Also called exposure effect (coined by Liebowitz in 1982), penetration effect (Blackburn 2004) or sampling effect: Experience goods suffer from consumer's high costs of finding the products they might enjoy to consume. Sampling unknown works on file-sharing networks decreases these discovery costs, making it more likely that consumers pay for products and performances of artists they discovered to like, but also less likely to buy from artists they like less.

50 <http://www.ssrc.org/programs/intellectual-property-markets-and-cultural-flows>

51 Leonardo Lichote, Pirataria – Os 'números mágicos' da pirataria na berlinda. Estudo do Instituto Overmundo e da FGV questiona cifras divulgadas, O Globo 31.7.2010.

52 <http://a2knetwork.org/watchlist>

Data and methodology

Any attempt to show file-sharing as the possible cause of a decline of the culture industries has to first establish that there is actually such a decline. Research thus has to start from data on unit sales, prices and revenues of legal culture industry products which are only available from industry associations like IFPI, MPAA and BSA. As interested parties these organisations report data in line with their current agenda.

Liebowitz, who the IFPI calls in for support, in his 2003 analysis examines the sales of albums as reported by the Recording Industry Association of America (RIAA). But he also questions the legitimacy of these numbers compiled by PricewaterhouseCoopers, arguing that "naturally, the RIAA tend to use these numbers in a way that is most consistent with the picture they wish to portray about the conditions of the industry. At the present time the condition they wish to portray is one where the industry is reeling from the impact of MP3 downloads." (Liebowitz 2003: 4) He points out that e.g. for 2001, RIAA chose total units (vinyl, music cassette and CDs, singles and albums) to trumpet a ten percent drop in sales, whereas CD revenues fell by only two percent while vinyl records, music cassettes and singles had been falling continuously for years, being replaced by CDs, and "clearly, most of [the decline in singles] has nothing to do with MP3 downloads." Even the same data source can lead to widely diverging estimates about the fundamental variables that researchers attempt to explain.⁵³

Also for "piracy" rates researchers and government agencies often work with data provided by the same industry associations.⁵⁴ E.g., Kranenburg/Hogenbirk (2005) attempt to examine the variations in "piracy" rates and revenue losses across 44 countries. They use data provided by the International Intellectual Property Alliance (IIPA) in its Special 301 country reports even though they acknowledge that "these data are probably biased in favor of the industries," because these are "the most commonly accepted piracy indicators" (111) and "no other data are available." (127)

The studies in our review use one or a combination of three approaches. A large group is based on conjectures, using proxies for which official statistics are available to draw conclusions about the unmeasured phenomenon in question. Typically, per capita or per household Internet or broadband access⁵⁵ or even computer ownership⁵⁶ is equated with the use of P2P file-sharing. This reminds one of the story every student gets to hear in methodology class about the drunk man who has lost his keys in a dark corner but searches for it under a lamp post because there he can see. Critics indeed have pointed out that many computer and Internet users do not file-share and even most of those who do, use them for other purposes most of the time. On the other hand, the growing time spent online itself competes with time for consumption of other entertainment goods. Thus, while there might be a relation between Internet use and decreasing record sales, it might have nothing to do with illegal music downloads.

Another large group is based on surveys that might or might not be representative for a national population, for Internet users or for file-sharers. Their advantage – that respondents' self-reporting is the only way of gaining insights into subjective factors motivating file-sharers – is also their disadvantage. GAO (2010) is rather critical about the use of surveys, including those on which the "piracy" estimates of the Business Software Alliance and the Motion Picture Association are based, citing that "one expert stated that the bias in surveys is hard to identify. For example, he commented that students, who are often the subjects in surveys of illegal file sharing, may either not

53 Both giving RIAA as their source, Goel et al. (2010: 1) state that U.S. music industry shipments dropped from a high of US\$ 14.6 billion in 1999 to US\$ 8.5 billion in 2008, i.e. a minus of 41,78%, while Dejean (2009: 326) writes that the U.S. music industry has seen a decline of 28% between 1999 and 2007. IFPI says minus 30% from 2004 to 2009 (2010: 18). Oberholzer-Gee/Strumpf find minus 17% from 1997 to 2007 (2009: 21).

54 Png (2008) has shown major statistical biases in the "piracy" rates reported by BSA.

55 Boorstin 2004, Zentner 2005, Liebowitz 2008. Peitz/Waelbroeck 2004 also use it, but conclude that Internet penetration is not a suitable proxy (75).

56 Michel (2006).

admit that they are engaging in illegal activity, or may admit to such behaviour because it may be popular for this demographic." (21)

Only a minority of studies uses actual empirical data from P2P usage, allegedly because they are hard to get. In the original Napster, the transactions between the peers were mediated by a central index. Here, (privacy and other issues having been solved) primary data from the complete network was in principle available. Oberholzer-Gee/Strumpf (2004/2007) were able to use the log-files of two OpenNap servers, free software descendants of Napster. Today, eDonkey is one of the last P2P systems still using central index servers.⁵⁷

Juridical pressure led to a diversification of P2P architectures and to decentralisation, encryption, obfuscation, closed networks and a shift towards other forms of sharing (file-hosting, Newsgroups). In a decentralized P2P systems like Gnutella or BitTorrent it is impossible to get a complete picture of the activities. Also the diverging characteristics of P2P protocols make some better suited to transfers of smaller files (MP3, text on eDonkey), while others are optimized for large files (video, software, games on BitTorrent).⁵⁸ Therefore a comprehensive picture of P2P alone would require data from at least a range of different networks.

The main method for acquiring data on P2P activities is (automated) participation in the networks: The data collector acts as a node, sending out requests and downloading results in order to eliminate malware, fakes and other miss-labeled files, as well as recording search requests by other nodes. The market research company BigChampagne⁵⁹ developed this method into a successful business, monitoring works for their clients from the culture industries. Blackburn (2004) utilised data from BigChampagne. However, querying a P2P network with a sample of works and recording hits, is a method readily available to any researcher. Tanaka (2004), Bhattacharjee et al. (2007), Smith/Telang (2008) and Balázs (2009) have used it to acquire their own data sets. Aigrain (2010) is working with a large high-quality data set made available by Aidouni/Latapy/Magnien (2008). Thus it is unclear why so many economists are still working with questionable proxies for behaviour that is in fact observable.

Oberholzer-Gee/Strumpf (2009: 18) list four studies that use actual P2P data – with a surprisingly clear result: "While the majority of papers reports some sales displacement, the four studies using actual measures of file sharing (Tanaka, 2004; Bhattacharjee et al., 2007; Oberholzer-Gee and Strumpf, 2007; Smith and Telang, 2008) find that file sharing is unrelated to changes in sales."

A brief evolution of P2P research

The first step in research was to establish any economic harm by file-sharing at all. Then the analyses widened to include comparisons between geographic regions, primary P2P data, the positive effects of file-sharing on sales, a differentiation by popularity of artists, by genre, by age and other demographics of Internet users and finally social welfare and the efficiency of the current copyright regime and possible alternatives to it.

Liebowitz (2002) finds that the arguments for Napster as a "potentially serious threat" "remain basically theoretical. ... The evidence that has been put forward to this point does not

⁵⁷ Aidouni/Latapy/Magnien (2008) have captured almost 9 billion messages involving almost 90 million users and more than 275 million distinct files off an eDonkey server. This data set is currently being analysed by economist Aigrain (2010).

⁵⁸ See Ipoque 2009: 7 ff. for a comparison of content on eDonkey and on BitTorrent.

⁵⁹ <http://www.bigchampagne.com/>. It describes its activities thus: "The BigChampagne Media Measurement BitTorrent monitoring system is comprised of the following: Building a database of active torrents; Creating and maintaining title/metadata databases; Matching the torrent records to the titles/metadata in the databases; Around the clock scraping of seeders and leechers for torrents; Collecting file sizes; Participating directly in relevant swarms; Monitoring downloads directly, performing geographic analysis and more; Reporting and analysing activity at the title (aggregate) level and the individual torrent level for albums, movies, TV shows, etc." (Page/Garland 2008)

clearly point to the direction of the impact, to say nothing of the magnitude." (22) He does predict that in the not too distant future DRM will end any harm to copyright owners brought about by unauthorized copying. In his (2003) paper there was still no proof of harm. Liebowitz finds that the recording industry's evidence in the 2000 lawsuit against Napster "failed to support any claim of harm," nor was there evidence of any decline in record sales. Nevertheless, he sees "good economic reasons to believe that online file sharing would be harmful to the industry" even though "the evidence to support this claim had not yet surfaced." (2) This was in 2003, the fourth year of P2P file-sharing with participation ranging in the tens of millions,⁶⁰ the year The Pirate Bay is founded and the iTunes Music Store goes online. Even so, evidence of harm had not yet surfaced. In his 2006 paper, Liebowitz demagogically speaks about "organized file sharing" (10) and tells his readers: "Common sense is, or should be, the handmaiden of economic analysis. When given the choice of free and convenient high-quality copies versus purchased originals, is it really a surprise that a significant number of individuals will choose to substitute the free copy for the purchase?" (24) Nevertheless, he is careful to point out in his conclusion: "We do not yet have enough evidence to draw any but a preliminary conclusion. ... With a technology this young, and markets changing this fast, it would be most unwise to claim too much given the risk that the future may prove a current conclusion to be incorrect." (2006: 24)

In 2008 Liebowitz presents his only original research. At a time when the contrivance of using the number of Internet users as proxy for file-sharing has already been widely dismissed, he goes to great length in arguing that it is indeed a valid method. Nevertheless, he seems to be aware of the weakness of the claim of a causality of Internet use and file-sharing. Because he does not have a measurement of file-sharing intensity, he takes the assumption that young people are more likely to file-share than older people to derive a file-sharing "propensity," thus in effect using youth as a proxy. Comparing data on Internet access and age from 99 US-American cities in the years 1998 and 2003 he finds youth to be negatively correlated with record sales. His calculations yield a "reduction in sales due to file-sharing [that] appears to be larger than the actual measured decline in record sales." (29) He explains this as indicating that file-sharing has not only caused the entire decline in record sales but also the failure of an extrapolated growth that would have occurred without it. This is in stark contrast to the recent increases in sales of CDs reported from major markets like Brazil and the UK, that do not correspond to any decrease in file-sharing activity.⁶¹

Macro data lends itself to comparisons between cities and countries. Researching the pre-file-sharing situation, Hui/Png (2003) look at 28 countries in 1994-98. Zentner (2005, 2006) uses international time-series aggregate data in conjunction with Internet penetration, finding that countries with more broadband-connections have experienced stronger reductions in album sales. Peitz/Waelbroeck (2004) look at 16 countries, Boorstin (2004) and Liebowitz (2008) each at 99 US cities.

Oberholzer-Gee/Strumpf (2004/2007), Blackburn (2004) and Tanaka (2004) were the first to use primary P2P data. While Tanaka and Oberholzer-Gee/Strumpf find no effect of downloading on sales, Blackburn finds a negative effect on stars and a positive effect on less known artists. Bhattacharjee et al. (2006) monitored Kazaa for effects of legal actions, showing that while file-sharing intensity decreased for a short time, an ample supply of all chart albums remained available for download.

That the discovery effect of file-sharing may actually stimulate sales was already assumed by Shapiro/Varian (1999). It was first shown by Blackburn (2004) for unknown artists, in the survey

60 Peitz/Waelbroeck (2004: 76, table 2) give 44.6 million clients for seven P2P protocols active in June 2003, with Kazaa (35 million) being the largest.

61 Tschmuck (2010) lists further empirical "anomalies": Japan, the second most important music market in the world, suffered an 8.2% decline in CD sales pre-Napster between 1997 and 1999, but an increase by 7.9% in 2000. In France CD sales reached a historic high in 2001. The UK-market dropped by 17.7% in 2001, remained at the same level until 2003, rose by 4.4% in 2004 and showed its first strong dip in 2007. These diverse changes are difficult to reconcile with a continuously and globally growing P2P file-sharing population.

of Tanaka (2004) and in Boorstin (2004) for those older than 24 years. Bounie/Bourreau/Waelbroeck (2005) in their survey find two distinct types of file-sharers: the "pirates" who keep most of their music downloads, substituting them for purchases, and the "explorers" for whom downloading leads to an increase in purchases of CDs. 88% of their respondents obtained free MP3 files. Nearly all of them reported discovering new artists and 70% said that this led them to purchase CDs that they would not have purchased otherwise. "This result illustrates a strong 'sampling effect' among the respondents of the survey." (10) Their two types could thus be rephrased as "music lovers" who download *and* buy a lot, and "casual music listeners" who download less than half the number of files of the "music lovers" and would not have purchased them. Peitz/Waelbroeck (2006) again observe that music is an experience good characterised by a two-sided asymmetric information problem between sellers and buyers that can be solved by sampling. "The property that sampling allows consumers to find a better match to their tastes, tends to lead to higher profits under file-sharing." (908)

Blackburn (2004) was the first to differentiate by popularity of artists, showing that well-known artists suffer substitution, while unknown artists benefit from a discovery effect. Because the popular artists sell more albums he finds the overall market effect to be negative. For cultural diversity, one can conclude, the effect is positive, as it curbs the crowding-out effect of superstar sales on other albums⁶² and makes it easier for new and previously unknown artists to break through. Gopal/Bhattacharjee/Sanders (2006) confirm that "as sampling becomes less expensive, the superstar effect is eroded overall, and more users purchase music items based on their actual, not perceived, valuations," (1528) favouring lesser known artists.

That also a differentiated look at genre preferences is required for estimating effects on sales and downloads was first shown by Bounie/Bourreau/Waelbroeck (2005). They find that those who download rap music have a significantly higher probability to have reduced CD consumption than those who download pop/rock music (13). Like Zentner (2005) they find a differential effect on international and local repertoire: "Around 8% of [file-sharing] respondents got music from French artists, whereas according to the French recording association (SNEP), French songs represented more than 40% of total CD sales in France in 2003." (8) The survey in Huygen et al. (2009) sheds some more light on file-sharing and genre preference (68 ff.).

Boorstin (2004) was the first to show that the impact of file-sharing varies with age. Using Internet access as proxy, he finds that those below 24 years use P2P to substitute music purchases, while those above, because of a sampling effect, complement it with CD purchases. Because the buying power of the older group exceeds that of the younger the overall effect on CD sales is positive.

Bayaan (2004) is the first to not simply ask for economic effects on "the music industry" or on "rights-holders" – implying that authors, performing artists, publishers and labels, large and small are one homogeneous actor – but specifically on artists. By not only looking at the gains or losses of firms but of those of other actors as well, he opens up the research perspective to a welfare analysis. He finds that in the best case scenario the "gain for consumers is more than enough to offset the loss of profit incurred by firms and signed artists so society as a whole benefits." (17)

Economics traditionally defines social welfare as the sum of consumer surplus and producer surplus. The seminal reference for the welfare implications of unauthorized reproductions is Takeyama (1994). She assumes network effects, i.e. an increase of consumers' valuations of a product with the number of other consumers who adopt the same product. The effect is most obvious for interoperating products like fax machines and computer software, but, writes Takeyama, "there are many less obvious sources of network externalities, including the psychological desire to 'join the bandwagon.'" (155) Earlier studies had reached varying conclusions with regard to the effect of unauthorized copying on social welfare, but did show a consensus that firm profits

62 He points out that "the last album to sell even 7 million copies in one year was 'N Sync's 'No Strings Attached,' which sold 9.9 million copies in 1999, just as file sharing was born." (Blackburn 2004: 13)

necessarily decline with copying. In contrast, her paper demonstrates "that, even without indirect appropriation, when demand network externalities are considered, not only can copying lead to greater firm profits, it can produce a Pareto improvement in social welfare." (156)

This has been confirmed by Rob/Waldfoegel (2006), who IFPI (2010) cites in its support. Asking for consumer valuation of certain albums, they do find that downloading reduces their respondents' per capita expenditures (on hit albums) by 25 US\$, but also that it raises their surplus by 70 US\$. The reduction of 45 US\$ per capita in deadweight loss, i.e. in socially beneficial, but otherwise foregone transactions, is nearly double the reduction in industry revenue (32). Also for Oberholzer-Gee/Strumpf a key question is how social welfare changes with property rights for information goods – de facto, if not de jure – weakened by P2P file-sharing. In (2009), they remind us that "copyright exists to encourage innovation and the creation of new works; in other words to promote social welfare. The question to ask is thus whether the new technology has undermined the incentives to create, market, and distribute entertainment. Sales displacement is a necessary but not a sufficient condition for harm to occur. We also need to know whether income from complementary products offset the decline in income from copyrighted works. And even if income fell, welfare may not suffer if artists do not respond to weaker monetary incentives." (24) Their reading of the empirical research so far shows that none of the three conditions hold. "Consumer access to recordings has vastly improved since the advent of file sharing. Since 2000, the number of recordings produced has more than doubled. In our view, this makes it difficult to argue that weaker copyright protection has had a negative impact on artists' incentives to be creative." (25)

Huygen et al. (2009) in a study commissioned by three Dutch ministries⁶³ looked at the economic and cultural effects of file-sharing in the three sectors of music, film and games. The Netherlands is particularly interesting for two reasons. Its early and wide broadband adoption makes it rank very high in international comparison. By household penetration, average download speed and subscription price in 2008 it was nearly twice as well equipped for file-sharing than the United States. Yet Huygen et al. find that "the number of music downloaders in the Netherlands is slightly higher than the number most recently found in the US ... Whereas the percentage of film sharers in the United States was more or less the same as in the Netherlands between late 2003 and early 2006, the most recent figures [2008] show that the percentage is now substantially higher in the US. The only known figures for the US show that the percentage of game downloaders is also much higher than in the Netherlands." (86 f.) If another proof that Internet penetration is an unsuitable proxy for file-sharing had been needed, this is it. The second reason that makes the Netherlands stand out against most other countries is that its copyright law permits downloading of copyright protected works from file-sharing networks for personal use. Thus the downloading behaviour is largely unaffected by fear of prosecution. The Dutch survey confirmed the existence of two distinct groups of intensive and of casual media users, where the former download *and* purchase a lot. Music sharers are no less or more likely to be buyers of music than other people but they buy more merchandise and go to concerts significantly more often. Film sharers buy DVDs no less or more often than anyone else, but if they buy, they buy significantly more DVDs than non-file sharers. Game sharers also buy games, and significantly more frequently than non-file sharers (82). While the majority of respondents in the Dutch study report discovering new genres and artists as their reason for file-sharing, 13% of music and film sharers mention "making social contacts." (77) This shows that file-sharing as a cultural practice is significantly different from the use of streaming or all-you-can-eat download services that are often mentioned as legal alternatives.

As for the dynamics in the three sectors, Huygen et al. find that only the markets for CDs and for DVD rentals are suffering from a slump. "The markets for DVDs and console games continued to grow impressively after P2P services were introduced, and the cinema market showed sustained growth between 1999 and 2007. The total entertainment market has remained more or less

63 The Ministry of Education, Culture and Science, the Ministry of Economic Affairs and the Ministry of Justice of the Netherlands.

constant, suggesting budget competition among the various products." (103) Their estimates on the aggregate welfare balance of file-sharing in the Netherlands are strongly positive in the short and long terms, amounting to about 100 million Euro per year. "The gains enjoyed by consumers are more than twice as large as the losses suffered by producers." (107 f.) Their conclusion: "The survey held among Dutch internet users has shown that file sharing is here to stay and that people who download are at the same time important customers of the music industry. ... File sharing and P2P networks have become generally accepted practices and important drivers for innovation. It would therefore be ill advisable to criminalise file sharing by end users. ... The fact that file sharers in the United States buy fewer products may be related to their harsher treatment in that country." (121 f.)

Goel et al. (2010) also argue that unauthorized file-sharing is beneficial to public welfare. They point to the deadweight loss that copyright creates by preventing downloads of works that downloaders are unwilling or unable to purchase which "results in lower social benefits without any increase in revenue for media providers." (4) And they point to the monopoly of copyright and the oligopoly that emerged from it in culture industries: "Further, large media companies may historically have stifled creativity by having excessive influence on deciding what types of works get produced and marketed as well as maintained artificially high prices – e.g., by paying radio stations to play certain numbers, selling more expensive albums rather than the single tracks desired by music fans, and promoting more popular artists at the cost of those with niche followings (and smaller potential profits). Lower search, promotion, and distribution costs associated with the Internet may loosen the stranglehold of large companies and promote creativity while providing works that better cater to diverse consumer tastes at competitive prices." (4)

Social welfare thus turns out to be a common theme for nearly all studies on the impact of file-sharing. It is a traditional issue when economists look at the trade-off between under-production and under-utilization of public goods, which creative works sans copyright are by nature and which they have de facto become thanks to file-sharing. Moreover, social welfare is of primary concern for public policy makers who cannot look at record label and publisher profits alone, but have to seek to optimize the aggregate surplus of all actors involved: of authors and performing artists, of consumers, of commercial users of copyright works like radio stations and ISPs and of industries that provide complementary goods and services like MP3 players and mobile phones. Policy makers most of all have to consider the current and future welfare of society as a whole, of education, access to knowledge, cultural diversity and innovation. As Benkler has shown so aptly, the special feature of information goods is that they are both the input and output of their own production process. "In order to write today's academic or news article, I need access to yesterday's articles and reports. In order to write today's novel, movie, or song, I need to use and rework existing cultural forms, such as story lines and twists. This characteristic is known to economists as the 'on the shoulders of giants' effect." (Benkler 2006: 9)

Preliminary findings

Is P2P file-sharing responsible for the slump in recorded music sales or does it create demand? The empirical research literature is inconclusive. If one were to simply add up studies showing a negative effect and those showing no or a positive effect one would find that the two camps are on par. But that is, of course, not a meaningful exercise. What has clearly emerged is that there are quite a number of different dynamics at work yielding a mixed result with respect to album sales, a likely positive result for the music industry as a whole through gains in concert and merchandising revenues, and a clearly positive effect on social welfare through improved market chances for non-star music, greater cultural diversity and increased consumer surplus.

Since it is evident that a mono-causal explanation is not tenable, a number of studies look for alternative explanations. These include the shift in distribution after 1999 with most record

stores disappearing and trade becoming concentrated in large retail chains such as Walmart, which drive down unit prices and concentrate on bestseller inventory (Oberholzer-Gee/Strumpf 2007: 39), and other media competing for consumer's time and budgets, in particular DVDs, computer games and mobile phones (Oberholzer-Gee/Strumpf *ibid.*; Huygen et al. 2009: 103). A fairly obvious candidate for replacing a certain share of record sales, the market for used CDs, has not been tested or even mentioned in any of the research papers in our review. The only paper we are aware of that analysed an online market for second-hand cultural goods is Ghose/Smith/Telang (2006) on books. They "speculate that cannibalization may be particularly acute for digital products, such as CDs and DVDs." (17)

Tschmuck (2010) finds another plausible explanation in the major label's decision to fade out singles. The single format rose to a high of 800 million units sold world-wide in 1983 after which it nearly disappeared because the profit margin is much higher for albums. Listeners however, dislike albums which they often consider to contain only one or two tracks of interest while the others are dispensable fillers. First Napster and then iTunes re-introduced what consumers really wanted: a large diversity to choose from in single tracks. "Since 2004, when digital sales were reported for the first time, single sales more than quadrupled (!) to 1.5 billion units" in 2008, the same number as that of albums in all formats sold in that year. "It is clear that you cannot earn the same revenue with the same number of single units than with long-play units sold. Therefore the drop in sales is due to the conversion of an album to a single market." Tschmuck cautions against replacing one mono-causal explanation (file-sharing) by another (shift from albums to singles). "However, the 'single market'-thesis contributes a much better explanation for the declining sales in the recording industry than the 'filesharing' thesis."

Another factor mentioned by Oberholzer-Gee/Strumpf (2007) is that a period of atypically high sales, when consumers replaced older music formats with CDs, ended at the turn of the millennium. The replacement of formats is illustrated very clearly by Table 2 in Tschmuck (2010), showing the global sales development for different record formats based on IFPI data: The vinyl LP reached its historic high in 1981 with 1,140 million units. By this time the LP's successor, the pre-recorded music cassette, was already coming up, reaching its high in 1991 with 1,493 million units. And again by this time the next generation, the CD, had started its rise to its all-time high in 2000 of 2,454 million units, thus more than twice as many units as the LP had sold in its best year. By this time the CD's successor, Internet and mobile downloads were – nowhere in sight.

Recall that the Internet turned into a mass-medium after the first web-browser was released in 1993. The Fraunhofer Institute that had developed the MP3 audio compression technology made a software encoder freely available in 1994 and MP3-encoded music started to spread on the Internet, much of it freely offered by independent artists and much of it encoded from commercial CDs and redistributed without authorization. Therefore anybody interested in music had been aware of the powerful features of digital files and was waiting for the logical transition from the CD to the new format to occur. But it did not, until Apple opened its iTunes Music Store in 2003. What did the major record labels do during the intervening ten years? Two things. For one, they tried to suppress the new technology, suing producers of MP3 players and attempting to outlaw the file format altogether. Second, they bet their business on Digital Rights Management (DRM). By means of cryptographic encapsulation it promised an unprecedentedly fine-grained control over copyright works after delivery to the customer. When it became clear that DRM by itself would not be able to fulfil this promise the music industry sought additional legal protection against its circumvention, which was granted in 1996 by the WIPO Copyright Treaty. A number of industry consortia were set up to establish DRM solutions in various sectors of the culture industry. One of the largest was the Secure Digital Music Initiative (SDMI) established in 1998 by the IFPI and joined by more than 200 companies, including all major computer makers, but quietly disbanded in 2001 after failing to reach its ambitious goals. DRM was primarily used for controlling downloads but also CDs. Sony-

BMG's root kit fiasco of 2005 was likely the last nail in the coffin of DRM (s. Grassmuck 2006). In 2007 all four music majors announced that they would stop using DRM.

If one extrapolates the ten year cycle of LP, MC and CD, 2010 should have been the peak of digital download albums. The gaping hole in the fifth column of Tschmuck's table can therefore likely be explained by the music industry refusing to sell their products online without DRM for ten years. Consumers balancing the harm of DRM against the risk of being caught getting a DRM-free version from an illegal download site or, since 1999 from a P2P network, likely chose for the latter. 'Because it's free' the IFPI claims to be the main motivation for file-sharing. But during the same period mobile music downloads turned into a mass market with consumers often paying ridiculously high prices for a few seconds of ringtone of their favourite songs. Thus P2P filled a gap created by industry itself. It is remarkable that none of the studies asking for alternative explanations for the slump in music sales considered the retarding effect of the dead-end street of DRM.

Media technological factors are clearly at the centre of the changing socio-cultural practices. With pervasive gigabyte memory in mobile phones, MP3 players, USB sticks, personal computers and online storage services, the CD as information carrier is clearly losing its attractiveness. File-sharing therefore is a symptom rather than the cause of the changing usage patterns. Thus, asking for the effect of file-sharing on CD sales, as the majority of economic studies have done so far, rapidly becomes obsolete. Research on the universe of file-sharing has to look at a much wider scope of dynamics in technology and in social practices.

From industry to audiences

With the Internet, the initiative in re-distributing published works to a large degree has shifted from industry to audiences. Duchêne/Waelbroeck analyse the change from traditional information-push strategies of media industries towards P2P as "an information-pull technology where consumers spend resources to acquire information on products they have a potential interest in." (2006: 566) More importantly, they do not only acquire but also provide information on products they have a manifest interest in, including these digital products themselves. While all of the studies in our sample look at downloads, the complement, the making available for download, the motivations for it and the promotional effects it has, remains under-researched.

"The cultural industry not only lost a part of its revenue but also its ability to select, promote and impose cultural production of its choice." (Dejean 2009: 345) It lost this ability to its customers who can now take the selection and the promotion of what they like into their own hands. Whereas downloading might be motivated by obtaining an item for free, making it available to others involves a significantly higher cost. It can be taken to signal: "I like this. Have a look." In addition, some of the studies mention the significance of more explicit forms of communication. Volz (2006) finds that in particular fans of non-stars music highly value communication possibilities such as chats and discussion boards which allow them to find each other and have a conversation. The Dutch study finds that 13% of music and film sharers report as their reason for file-sharing "making social contacts." (Huygen et al. 2009: 77)

Showing others what one has discovered and likes is an important part of cultural appreciation. Therefore one can assume that conversation, gift exchanges, social distinction by showing off rare items, up- and download ratios and other social mechanisms are important in file-sharing communities and that they therefore constitute more complex cultural practices than just acquiring something for free.

Researching file-sharing as social practice also has methodological implications. Instead of approaching file-sharers as objects of research by passively monitoring their actions or, even further

removed, utilizing macroeconomic data, one could view them as partners and solicit their cooperation in the exploration of this terra incognita.⁶⁴

From mono-culture to diversity

"The music industry's business model is to produce stars. ... Stardom leads to a limitation of available diversity and variety." (Volz 2006: 659) Starting from this observation, Volz asks how the online environment might increase demand for and availability of a larger diversity of music. His survey shows that the ratio between MP3 downloads and CD purchases is positively correlated to the usage of P2P file sharing networks. Both the numbers of purchased CDs and of downloads have a negative correlation with the star-factor. "One can conclude that more intense music consumption leads to a preference for nonstars." In short, "online music consumers do prefer a more diverse selection than offline music consumers," (665) and "while iTunes appears to be a tool to distribute popular music especially, P2P networks are a tool to promote less popular music." (664)

The discovery effect of file-sharing has been shown by many of the studies. Superstars who are promoted via all channels have little extra to gain from it, therefore discovery naturally works in favour of lesser known artists. For audiences this means a greater variety on which they can develop their taste, find more specialized products that fit it and avoid bad buys. For artists it means the skewed distribution of success flattens and therefore their chance of being discovered by audiences and building a reputation rises.

Gopal/Bhattacharjee/Sanders (2006) find: "As sampling becomes less expensive, the superstar effect is eroded overall, and more users purchase music items based on their actual, not perceived, valuations." (1528) They see this reflected in the sales charts: "We find strong evidence that, over the last decade, the number of unique artists and albums that have appeared on the Billboard Top 200 album charts is statistically related to the number of Internet users." (1526)⁶⁵

From recorded to live music

Liebowitz (2003: 21) based on data from Pollstar finds a large real increase in concert revenues in the US in the years 2000 and 2001. Volz (2006), without referring to data, remarks that discovery through file-sharing leads consumers to go to concerts they would not have gone to without knowing the music. "Since the main income source for most musicians is from performances and not recorded music, P2P networks will help to generate an income for nonstars, allowing them to further perform and establish a greater diversity of music." (664)

The Dutch study states that alternative sources of revenue that still guarantee excludability such as live concerts, ringtones and merchandise have been virtually ignored in the analyses that they have reviewed (Huygen et al. 2009: 23). They cite research by GfK Germany that revealed that the market for concerts outstrips that for music recordings (42). They also note that ticket prices for live concerts have shot up in recent years. In their survey they find: "As for concerts, file sharers go

64 In analysing their data harvested from the three most popular Hungarian BitTorrent trackers, Balázs/Zoltán (2009) encountered the problem of having to disambiguate the wide variety of torrent file names to the movies they contain. With a data set of more than 7,000 items, to do this by hand would have been an arduous task. Automatic pairing algorithms provided noisy results. "Therefore we decided to crowdsource the task of pairing and asked the file-sharers themselves to participate in connecting torrent files with titles. The result was beyond any expectation: several hundred anonymous users finished this task in less than a week, with very few (less than 1%) errors." (16)

65 "The number of unique artists on the charts has shown some changes with the introduction of new technologies such as the graphical Web browser (1993), widely available MP3 playback software (1997), and peer-to-peer (P2P) file sharing software (1999). These technologies represent watershed events, since the browser made Internet surfing easier for all, created online fan clubs, and lowered sampling costs; MP3 players spurred the conversion of digital music files into smaller MP3 format files; and P2P software blossomed by enabling the sharing of such files, further lowering sampling costs." (Gopal/Bhattacharjee/Sanders 2006: 1522 f.)

quite a bit more often than non-file sharers: an average of 3.8 times compared with 1.6 times a year, file sharers buying merchandise 0.36 times compared with 0.23 times for non-file sharers." (74) The Swedish study states that the revenues of both the five largest Swedish live promoters and the royalties collected for live music by the collecting society STIM doubled from 2001 to 2008 (Johansson/Larsson 2009: 5, 6).

One of the rare studies that specifically address the interaction of file-sharing and live performances is Mortimer/Sorensen (2005). They base their analysis on US concert data from Pollstar for 1,806 artists in 1993-2002, covering a wide range of artists from relative unknowns to major superstars, playing in venues ranging from small auditoriums and clubs to large stadiums. They find that "the number of artists on tour more than doubles from 1993 to 2002, with the total number of bands in those years increasing from 408 to 1000." (15) For their sample of bands that both tour and sell CDs they find a sharp rise in the years 2001 and 2002 in the number of concerts and in concert revenues. The ratio of concert revenues to CD sales is increasing from 1.10 in 1993 to 2.66 in 2002, with the most dramatic change coming in 2001. "In other words, in 1993, total concert revenues for bands are estimated to be roughly equal to total CD revenues, while in 2003, total concert revenues for bands are estimated to be over 2.5 times larger than CD revenues." (16) The number of different artists performing concerts also increased dramatically. (22) Bands were more likely to tour in the post-Napster period. "The largest increases in touring activity were seen by young bands (28.4 percent relative increase in touring activity), and among Jazz/Latin and Urban/Rap bands." (26) They conclude: "For artists, the decline in revenues from recorded music after 1998 is striking, but appears to have been more than offset by a concomitant increase in concert revenues." (32)

The copyright regime

With the digital revolution causing such fundamental shifts in cultural practices and markets, it is of little surprise that the empirical findings in our review lead many of the economists to question whether the current copyright regime is still adequate.

Takeyama has already shown in 1994 that even if copyright could prevent copying entirely and if all deterred pirates would subsequently purchase, profits would be less than with copying (Takeyama 1994: 156). Chen/Png (2003) test three possible responses by public policy to unauthorized copying: raising legal sanctions, imposing levies on copying equipment and media and subsidizing the purchases of information goods. For a publisher a price reduction and an increase in infringement detection are simply two alternative strategies for boosting legitimate demand, both with their costs and benefits. But for social welfare the three policy options yield significantly different results. Their work leads them to three conclusions: 1. "By reducing the expected benefit among those who copy, an increase in detection imposes greater social losses than a price cut." (118) 2. A levy on media is welfare superior to a fine on individuals who are detected to have made copies. It "has less effect on the legitimate price and encourages the publisher to reduce spending on detection." 3. "Our final result is that it is optimal to subsidize legitimate purchases. Besides stimulating usage, the subsidy leads the publisher to reduce spending on detection. Generally, then, our analysis suggests that policies focusing on penalties alone while ignoring [levies] and subsidies would miss the social welfare optimum." (118)

Remarkably, a number of authors from copyright countries suggest that a levy remuneration would be the best way forward. Leung (2009) compares a Three Strikes regime with a levy on MP3 players, Internet Providers and live music performances that benefit from file-sharing. He finds that most of the students in his US survey are ready to pay a surcharge on MP3 players in exchange for legalized file-sharing, that it would increase music producers' profits and would not stifle the incentive to create (22 f.).

Bahanovich/Collopy (2009) report that 56% of their UK respondents agree that manufacturers of copying devices should pay a fee to the artists whose music is copied for free. Furthermore, 80% of P2P users said they would be interested in a "file-sharing service where you could download any music in the world to own and keep" (2008: 32), a percentage that rose to 85% in their 2009 follow-up survey (18 f.). Likewise, Curien/Moreau (2005) suggest that labels rather than fight P2P and sue downloaders should embrace it and permit free downloading. They recommend that "record companies should support the implementation of a *global licence*. ... In such a system, which is already used by the radio industry to pay for the music they broadcast, revenues yielded from the fixed fee that internauts would pay when subscribing to an Internet broadband access, could accrue to artists as well as to record companies and partially compensate for the alleged losses due to piracy." (21)⁶⁶

The Research Project

The literature review has indicated promising but under-researched interrelations and a number of desiderata that the GPOPAI research project will take as its starting points. E.g. by working with chart repertoire, the existing studies do not allow to estimate the degree of cultural diversity in file-sharing networks (Aigrain 2009 presents a research agenda). File-hosting and closed file-sharing networks have not been researched at all.

The aim of the project is threefold: 1.) to explore the social and cultural universe of file-sharing, 2.) to develop and test tools and methods for empirically researching this universe and 3.) to develop a global interdisciplinary research network.

1. Exploration

The project will approach file-sharing as a social practice. Exchanging songs, movies and e-books is by itself a social act. Rather than trying to approach the phenomenon from a purely technical side, the project will take the social organisation of file-sharing as its starting point. The method has to be explorative and qualitative. It will be based on interviews with file-sharers, site-operators, bloggers, authors of relevant software, ISPs etc. Another method to be tested are case studies of specific works, e.g. prominent releases of indie labels, starting before their commercial release and tracking their appearance, transfers and life-cycles across different continents of the file-sharing universe, communities and geographic regions of Brazil.

A number of studies have shown significant differences between music genres (Tanaka 2004, Bounie/Bourreau/Waelbroeck 2005, Huygen et al. 2009, Tschmuck 2010) and national versus international repertoire (Zentner 2005, Bounie/Bourreau/Waelbroeck 2005) as to their popularity in the formal and informal market. From these findings one can draw hypotheses on the relevance of tastes of age groups, social strata and other demographics, the propensity of certain genres for being file-shared and the impact of pricing. The project will therefore try to identify certain genres like funk, classic or pagode that are fairly closely linked with communities of defined demographics and with players in the formal market. Exploring these communities will lead to online sites where they congregate and on to preferred modes of file-sharing in these communities.

2. Tools and Methods

The overarching hypothesis is that P2P and file-hosting are the principal means of sharing files in the digital realm. In addition, file-sharing on newsgroups and via mobile phones and their specific

⁶⁶ "Licence globale" is the name of a levied file-sharing permission that was supported by a broad alliance of artists and consumers in France in 2005. See Alliance Public Artistes, <http://www.lalliance.org/>.

technical conditions and social conventions will have to be looked at. The project will start with an exploration of P2P protocols (BitTorrent, Gnutella, OpenFT, Ares etc.) and file-hosters (RapidShare, MegaUpload, BrTurbo.com.br etc.). This will result in portraits of protocols and sites like trackers, indices, search engines and commentary sites that will allow us to establish what are the methods most widely used in Brazil, which ones we need to harvest and how representative the data are that we will be able to collect.

3. Research Network

The third goal is to establish a national and international interdisciplinary (economics, computer science, media and cultural studies, law etc.) research network. The primary purpose of the network is to enable the exchange among those involved in this research area. All parts of the resources and findings of both the GPOPAI project and the network, except those that for privacy or other reasons cannot be published, will be made publicly accessible. This includes bibliographies, lists of evaluated tools and methods, file-sharing watch on a joint blog, the software that is developed in the project, data sets, research papers and advocacy reports. Workshops and seminars will be held. Where findings are relevant to current debates in society and in public policy making, the network will actively intervene and serve as contact point for policy makers and the press in matters of file-sharing.

The final result will be a set of hypotheses and means to test them empirically that will form the basis for the second phase of the research project.

4. The Second Research Phase

Out of the GPOPAI project and the cooperations in the network, the second research phase will be developed in which the tools and methods that were developed in the first phase are applied in a comprehensive manner in Brazil and other countries by the partners in the network. As one of the peer-reviewers of this contribution has pointed out, the existing P2P studies cannot be compared, not only because the approaches and methods are so different, but also because every market is unique. It is our hope that by applying a common methodology, it will be possible to gain empirical and comparable insights into national and cross-border file-sharing activities and highlight what is unique about the different cultures.

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